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# **HIV/AIDS IN SOUTH AFRICA Towards a New Paradigm**

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This work has not been previously submitted in whole, or in part,  
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has been attributed, and has been cited and referenced.

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Signed by candidate

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## ABSTRACT

The HIV/AIDS epidemic in South Africa is more severe than almost anywhere else in the world and continues to grow. Here, and elsewhere in southern Africa, it is now a generalized epidemic, largely heterosexually spread. This is very different from the more limited epidemic in the United States of America and other developed countries.

It was in the USA in the five years after the first cases of AIDS that the understandings and explanations of HIV/AIDS were constructed. HIV/AIDS was defined as a transmittable infection causing a progressive deterioration of the immune system, leaving it vulnerable to opportunistic infections and disease of increasing severity resulting in inevitable death. Virology identified the virus that is the infectious agent and provided explanations of how it had its effect on the host, reproduced and was transmitted.

Influenced by the early association of AIDS with homosexuals, the social construction of HIV/AIDS has focused on *risk groups* and *risk behaviours*. These are now central components of a dominant paradigm that has informed but also limited research. This paradigm also informs and limits responses to and strategies to prevent the spread of the virus.

Drawing on Kuhn's contribution to the philosophy of science, ideas of social constructionism and epidemiology, this dissertation charts the development and application of what it argues is a limiting paradigm. The thesis is arguing that the dominant paradigm has failed to generate satisfactory explanations for why the epidemic is so different in character and extent in southern Africa than in the USA. It is argued here that preoccupation with behaviour has meant the neglect of the risk environment in which most people in South Africa live their lives. It is in this broader social environment that explanations of the difference, and hence the development of effective interventions, are likely to found.

The dissertation therefore argues for a new paradigm for HIV/AIDS in southern Africa that allows those explanations to be explored and responses appropriate to the epidemic in southern Africa to be developed.

### Key Words

HIV/AIDS, Epidemic, USA, South Africa. paradigm, behaviour, risk, environment, poverty, disease, nutrition, development, transformation

## INTRODUCTION

In the tenth year of South Africa's post-apartheid democracy, an estimated 3.83 million people, 15.2% of the country's adult population, are HIV-positive. South Africa's accumulated AIDS deaths up to 2004 are estimated to be 1.49 million. (StatsSA, 2004). Behind these shocking figures lies the tragic reality of an epidemic that despite interventions throughout its twenty years has not been checked. The HIV/AIDS<sup>1</sup> epidemic has an intensity in South Africa that, with the exception of a few of its neighbours, exists nowhere else in the world.<sup>2</sup>

The problem is how to explain the rapid growth of the HIV/AIDS epidemic in southern Africa and its apparent different nature from the far smaller epidemic in North America and Western Europe. A reappraisal of the dominant understanding of HIV/AIDS, developed in the USA and adapted in an attempt to explain the epidemic in southern Africa, is required. This reappraisal, and a focus on differences between the epidemic's social contexts in the USA on the one hand and in South Africa on the other, could contribute to the development of a new paradigm that better informs understandings of, and responses to, the epidemic in South Africa. This reappraisal is the subject of this dissertation.

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<sup>1</sup> HIV is the Human Immunodeficiency Virus, the infectious virus leading to AIDS, Acquired Immune Deficiency Syndrome. HIV/AIDS is used for the epidemic as now understood, AIDS for the 'disease' before the causal virus MarrensHIV was identified. HIV is used to indicate the infection; HI Virus to indicate the virus entity itself. HIV-positive is used to describe the status of those who have been tested and had confirmed that they are infected with the HI Virus; HIV-negative for those tested and found not to be so infected. HIV-positive people sometimes prefer to be referred to as people living with HIV/AIDS (PLWHA's), whether the inapparent infection or the developing/developed disease.

<sup>2</sup> At the end of 2003, the HIV prevalence rate for the 15-49 year old age group in South Africa was 21.5%. This rate was exceeded only by its neighbours Swaziland (38.8%), Botswana (37.3%), Zimbabwe (24.6%) and Lesotho (28.9%); in Namibia and Mozambique the rates were 21.3% and 12.2% respectively. Global adult HIV prevalence, also at the end of 2003, was 1.1%, with regional prevalence rates, excluding sub-Saharan Africa, ranging from 0.1% to 3.1%; in sub-Saharan Africa the range was 7.5 - 8.5%. (WHO, 2004a).

The epidemic will be examined drawing on two bodies of work that are complimentary. The first, social constructionism argues that understandings of disease emerge within social contexts. They come to serve a social purpose. (Brandt, 1987; Treichler, 1992; Jochelsen, 2001; Cochrane, 2004). The second analytical stream is epidemiology. This looks at disease in a broader socio-economic context combining both medical scientific knowledge and social factors to understand its occurrence and spread. (Mausner & Kramer, 1985; Macfarlane Burnet & White, 1990; Katzenellenbogen, 1993).

Kuhn's philosophy of science (1970) provides a framework for combining these two bodies of theory. He defines a paradigm as that body of scientific achievements that provide problems and solutions to a community of practitioners. In this thesis the term *paradigm* is used more broadly. It describes that body of knowledge, understandings and explanations of HIV/AIDS developed since the first AIDS cases. It is this paradigm that has informed scholars and practitioners in medical and social scientific thought and interventions towards the epidemic. The positive guiding role and the negative constraining role of paradigms will therefore also be identified.

Drawing on the traditions of social constructionism in the history of medicine together with the application of epidemiology permits an analysis of the development of the dominant paradigm about HIV/AIDS. Growing 'knowledge' – from scientific research and socially constructed understandings and explanations – of first the disease AIDS, then the newly identified viral infection HIV, and of the spreading epidemic of HIV/AIDS, informed the construction of the paradigm in the years 1980 to 1987. This analysis, in Chapter 2, will show the centrality to the HIV/AIDS paradigm of explanations based on identification of *risk groups* and *risk behaviours*. With the identification of the transmittable infectious agent, came the definition of the *HI Virus as the singular, necessary and sufficient cause of HIV/AIDS*. These are considered here the three distinguishing components within the total body of 'knowledge' that constitutes the HIV/AIDS paradigm and are referred to as such in the analysis that follows.



The spread of the disease across the globe was accompanied by the dominant HIV/AIDS paradigm, which it will be argued, after Kuhn (1970), was resistant to change. In Chapter 3 the paradigm's influence on responses to the epidemic in South Africa will be considered. I argue that that paradigm, constructed around the epidemic's manifestation in the USA and informed by that context, failed to produce appropriate understandings, explanations and interventions in the face of a very different manifestation of the epidemic in the different socio-economic context of South Africa and southern Africa.

Chapter 4 illuminates differences in the epidemic, health status and health care, and socio-economic realities, between the USA and South Africa. It concludes that South Africa's relative 'underdevelopment', its more generalised poverty and with it the diseases of poverty, constitute an environment far more conducive to the spread of HIV than any that exist in the USA. Factors highly significant in the South African epidemic will be identified and the failure of the dominant paradigm to encompass them will be highlighted.

In Chapter 5 it is argued that it is the totality of these environmental factors that explain the different scale and nature of the epidemic in southern Africa. It is proposed, from epidemiology, that this environment should be seen as one of risk for HIV infection, and that it is this *risk environment*, as opposed to *risk behaviours*, that should be overcome. It is argued that the public health focus of critical epidemiology needs to be resurrected and placed at the forefront of responses to the HIV/AIDS epidemic and, after Sanders (1985), that development is necessary to make further progress in overcoming disease, including HIV.

This study concludes that the construction of a more appropriate response to the epidemic in South Africa needs to encompass wider development objectives and that this requires the broader paradigm for the HIV/AIDS epidemic appropriate to its context in South Africa and southern Africa.

The USA and South Africa have been chosen for the comparison for the following reasons. The USA acts as a proxy for the pattern of the HIV/AIDS epidemic in rich industrialized countries of North America, Western Europe and the Antipodes. It has an HIV prevalence rate of 0.6%, within which women are 25.5%. South Africa is a proxy for the rest of south and central Africa. It has a prevalence rate of 21.5% within which women are 56.9%. (WHO, 2004a)

Although indisputably a 'rich country', the USA has 'pockets of poverty' and, like South Africa, a dual private and public health system. South Africa is defined a middle-income country but a hugely distorted distribution of income and wealth. Significant underdevelopment with extreme poverty and deprivation co-exists with a developed sector with 'pockets of affluence', and a minority of its population enjoys a standard of living better than the majority of the population of the United States and other developed countries.

Further reasons for the choice of the USA is that that country was the source and author of the dominant paradigm and it has lent its authority to its maintenance and defence since. South Africa has the general value, amongst less developed countries, of reliable and recent data. Its specific value however is that it brings together in one locus both manifestations of the epidemic. Uniquely, South Africa is at the confluence of two streams of the epidemic, that with connections from the developed world and that that has spread south from central Africa. Differences between manifestations of the epidemic in the USA and South Africa will be presented, along with differences between the two countries across a range of key factors that may fundamentally have influenced the course and nature of the respective epidemics.

## CHAPTER 1.

### THE DOMINANT HIV/AIDS PARADIGM

This thesis argues that understanding of the transmission of the HI virus and explanations of the rapid spread of the epidemic on southern Africa have been shaped by a dominant paradigm that began to emerge in the USA in the early years of the epidemic.

In this Chapter the three bodies of theory that inform the argument of the thesis are introduced. The first of these is Thomas Kuhn's theory of the development of scientific understandings of phenomena. This sheds light on how the dominant paradigm influences and limits understandings of and responses to the HIV/AIDS epidemic. The second is drawn from theories of the social construction of disease, which serve to illuminate how the HIV/AIDS has been understood and responded to by society. The third is epidemiology, specifically its theory of the multiple causation of disease. This approach illuminates the deficiencies of the dominant paradigm's explanation of the HIV/AIDS epidemic and points to interventions that may better contribute to control of the epidemic.

#### **Kuhn's Philosophy of Science**

The American historian and philosopher of science Thomas S. Kuhn presented a philosophy of science in his 1962 book *The Structure of Scientific Revolutions*, a work that is "among the most influential academic books of the past quarter century." The terms it coined, 'paradigm', 'paradigm change' and 'scientific revolution', "are now commonplace not only in the study of science but also within individual scientific fields, and even in many less scientific domains." (Hoyningen-Huene, 1993:xv).

Kuhn argues that scientific thought usually develops within a paradigm, a dominant body of ideas that inform understandings and explanations. Paradigms serve positively to focus research and investigation efforts. However the boundaries they set can also act negatively by excluding explorations that could lead to the establishment of 'better knowledge'. In the present era, securing research funding adds a further constraint, with funders of research, often businesses with an interest only in the commercial application of research outcomes, having a significant influence on what research is conducted and what results it pursues.

Kuhn defines a paradigm as the "universally recognised scientific achievements that for a time provide model problems and solutions to a community of practitioners." (Kuhn, 1970:viii). He describes how the study of the achievements of science prepares students for membership and practice in a particular scientific community; practitioners (scientists) are educated to understand, master, accept and apply the body of knowledge within the bounds of the paradigm. As a scientific community they then pursue 'normal scientific research', characterised by Kuhn as the "strenuous and devoted attempt to force nature into the conceptual boxes supplied by professional education." (Kuhn, 1970:5).

Normal science is conducted by –

Men [*sic*] whose research is based on shared paradigms and [who] are committed to the same rules and standards for scientific practice. That commitment and the apparent consensus it produces are prerequisites for normal science, that is for the genesis and continuation of a particular research tradition." (Kuhn, 1970:11).

Challenges to a prevailing consensus are normally resisted but when either contradictions or new phenomena insistently demand recognition, new theories that better explain and inform responses to these issues can supersede longstanding theoretical constructs. Major turning points in scientific development, such as those associated with the names of Copernicus, Newton, Lavoisier and Einstein, are identified by Kuhn as scientific revolutions.

These are "the extraordinary episodes in which [a] shift of professional commitments occurs . . . . They are the tradition shattering complements to the tradition-bound activity of normal science." (Kuhn, 1970:6). Like revolutions in the political domain, they are disruptive and destructive for some scientists and the relinquishing of a paradigm is usually a much contested process. Kuhn also makes the important point that "to be accepted as a paradigm, a theory must seem better than its competitors, but it need not and in fact never does, explain all the facts with which it can be confronted." (Kuhn, 1970:17-18). It is competition between sectors of the scientific community to better explain phenomena that drives the process leading to the rejection of previously accepted theory in favour of another.

In the field of HIV/AIDS, the primary distinguishing component of the dominant paradigm is the medical one. Central to it are scientific explanations of the function and transmission of the infectious agent and the essential and sufficient role ascribed to it. Key to this explanation is the predominantly sexual mode of transmission. Locked into a view of disease as an individual event, it then informs the view that the epidemic is driven by the behaviour of individuals, who are responsible for spreading the infection. Located first among a small group of men who happened, amongst other things, to be homosexual, the infection was linked to deviant sexual behaviour.

Basic assumptions of the medical model are that all disease is caused by a specific aetiological agent; that the patient is a passive recipient of medical intervention and the body a 'machine' rather than a person in a complex environment; and that restoring health requires medical technology. (Allais, 1995:3). Fee and Kriegler are critical of the emphasis on individual behaviour change in prevention strategies for HIV/AIDS. Noting the bio-medical model's role in determining prevention strategies, they record the relative failure of rational choice approaches to individual behaviour change and give the example of improved impact of anti-smoking messages based on social responsibility as opposed to individual health promotion. (Fee, 1993:1481).

## Social Constructions of Disease

Disease is socially constructed. As Brandt (1987) has pointed out, this means that it is shaped by both biological and cultural variables.

“Attitudes and values concerning disease affect the perception of its pattern of transmission, its epidemiological nature. Only if we understand the way a disease is influenced by social and cultural forces – issues of class, race, ethnicity and gender – can we effectively address its biological nature. A ‘social construction’ reveals tacit values, it becomes a symbol for ordering and explaining aspects of the human experience. In this light, medicine is not just affected by social economic, and political variables – it is embedded in them.” (Brandt 1987:5).

HIV/AIDS is no different. It too has been socially constructed, giving rise to a dominant paradigm within which understandings and explanations, responses and interventions, and research and the development of theory have proceeded in ways analogous to the conduct of Kuhn’s ‘normal science’. The paradigm that has dominated responses to the HIV/AIDS epidemic globally is that constructed in the early years of the epidemic. It was heavily influenced by dominant values in the United States at that time.

The dominant paradigm, informed by medical science, considers the spread of the epidemic primarily as a product of sexual transmission within risk groups in society engaging in sexual risk behaviour. Identifying those groups and having individual members of them change their behaviour became central to interventions to contain the epidemic. The focus was on the individual. (Fee, 1993; Cochrane, 2004).

Applied to the different epidemic developing in Africa, this paradigm was only slightly modified. Its essential features remain unchanged. Drawing on a history of racism and on deeply embedded theories of racial difference, research into cultural difference, particularly as expressed in sexual practices, early research into AIDS in Africa constructed the ‘African’ as unique and different. For a review of literature of this type, see Standing (1989).

This approach transplanted two of the dominant paradigm's central components to central/southern Africa: *risk groups* and *risk behaviours*. The former was adapted to include all 'Africans'. African 'victims' of AIDS were different and therein, it was to be understood, lay the explanation of the differences in the epidemic's manifestation. Since the main mode of transmission was sexual, African sexual practices must be different from those of North Americans and wealthy West Europeans (for which, read 'whites'). This is an approach exposed in numerous progressive critiques of the dominant paradigm and explanations developed within its bounds. (Chirumuuta, 1989; Packard, 1989; Duh, 1991; Zwi, 1991; Butchart, 1998; Head, 2001; Jochelson, 2003; Opping, 2004; Schoepf, 2004; and others).<sup>3</sup>

Nevertheless, these explanations were developed further. Cultural differences were explored to find evidence supporting the paradigm's component of *risk behaviour*. Where on the basis of limited evidence particular cultural expressions were found that fitted the requirements of the paradigm, these were attributed to African behaviour in general and became the basis for generalized 'explanations'. Parker (2001) traces how progressive researchers modified these explanations, though still within the dominant paradigm, with a shift from the cultural informants of behavioural choice to the socio-economic determinants of behaviour and constraints on behaviour change. Migration and multiple partners, and transactional sex for survival became common themes in later studies (Singer *et al*, 1990; Farmer, 1992; Schoepf, 1991). Schoepf identifies a growing attention to global inequalities of class, gender and ethnicity, "as poverty, powerlessness and stigma propel the spread of HIV." (Schoepf, 2001). This development suggests that the constraints of the dominant paradigm are beginning to be resisted by some researchers, with "the policies of the World Bank standing accused as a major contributor to the pandemic and a major obstacle to the health of the poor [in studies such as those of Millen & Lederer 1998; Kim *et al*, 2000; Schoepf *et al*, 2000; Millen *et al*, 2001] from 1998 onwards." (Schoepf, 2001).

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<sup>3</sup> Farmer's analysis (1992) of explanations of AIDS among Haitians and US residents of Haitian origin were constructed is similarly critical of the assumptions of racial difference.

Since the earliest 'gay plague' representation of AIDS, the dominant paradigm has regarded *behaviour* as the key issue, for an explanation of transmission and as the target of interventions to reduce the risk of infection. In Africa this meant identifying behaviours by 'Africans' that could account for the widespread heterosexual transmission of the infection.<sup>4</sup>

Numerous studies suggested that African sexual behaviour is characterised by multi-partner sex, with frequent partner changes. Standing's *Review and Annotated Bibliography of Sexual Behaviour in Sub-Saharan Africa* (1989) provides an insight into the range of these studies and their nature. Study populations were largely tribal groups and the behaviours identified seem to be those promoted by the conservative elements within the (usually male) tribal hierarchy. They frequently use the ethnographic present for decaying tradition in the course of the tribal members assimilation into wider national society.<sup>5</sup> Interest focused on the 3 P's – polygamy, prostitution and promiscuity – but also on age of sexual debut, rape, child abuse and rituals involving scarification, circumcision (male and female) and violence in relationships. Leclerc-Madlala (2000, 2001, 2002a, 2002b) has produced studies exhibiting a similar fascination with 'Zulu' culture, customs and behaviour. Eaton *et al* (2002), Soskolwe *et al* (n.d.), and Levine and Ross (2002) are more concerned with perceptions, attitudes and determinants of behaviour. These studies all reinforce the dominant explanation of the epidemic's spread as being a product of sexual behaviour. Whatever the good intentions to produce material of use in informing prevention strategies, they assist in sustaining the approach to the epidemic's study and control within the dominant paradigm.

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<sup>4</sup> It is beyond the scope of this study, but a very important research question, nevertheless, to investigate why the stereotype of an essential 'African' continues to exist. Africa is composed of 53 countries, with numerous different histories; different experiences of colonialism, and none; and different post-independence trajectories – and in what it means to be 'African' – the differences of social class (encompassing occupation, income and wealth, and education and opportunity); language; ancestry or country of origin for some; sex, age, and gender; religion and belief system; and the differences between rural and urban lives, and between lives lived in affluent and in deprived settings. 'African', 'southern African' and 'South African' are not homogenous categories. To apply one notion of 'race' to all, and ascribe then the same sexuality/sexual behaviour to all 'Africans', should not be regarded as a serious contribution to understanding. Further, sexuality, sexual preference and sexual behaviour are fluid, and influenced by opportunity, potential partners, one's own and one's partner's personal values and beliefs. Socially, they are constructs, influenced by normative values. They change over time within the history of a society and may change in the life of an individual. The impact of these manifold influences on sexual behaviour makes the latter hugely unpredictable. (Weeks, 1986).

<sup>5</sup> One of the studies referred to concedes that the behaviours referred to are "customary or 'traditional' which were already reported to be dying out or becoming modified in the 1940's[!]." [in Standing, 1989:68]



## Epidemiology, Health, Infection and Disease

A critical understanding of the HIV/AIDS epidemic must necessarily be referenced to the theory of epidemiology. As a source, Mausner & Kramer's Introductory Text on Epidemiology was used (Mausner & Kramer, 1985). The publication date of its second edition, 1985, coincides with the early years of the global AIDS epidemic. It is not therefore unreasonable to expect that good basic epidemiological practice in response to the AIDS epidemic would have been informed by the theory covered in this introductory text. As the authors state in the Preface, "the basic principles presented [in the text] should provide a background for investigating the epidemiology of specific diseases." (Mausner & Kramer, 1985:vii).

Epidemiology may be defined "as *the study of the distribution and determinants of diseases and injuries in human populations*. That is, epidemiology is concerned with the *frequencies* and types of illnesses and injuries in groups of people and with *factors* that influence their distribution." (Mausner & Kramer, 1985:1 - *emphases in the original*). The basic sciences are involved in advancing and applying scientific knowledge in the various disciplines, are research orientated and largely laboratory-based. Clinical medicine focuses largely on the medical care of *individuals*, typically sick people who have presented themselves for help. Public Health is concerned with the health of a defined community and the maintenance of health<sup>6</sup> through the prevention of disease.

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<sup>6</sup> The World Health Organisation's 1948 Constitution defines Health as *a state of complete physical, mental and social well-being and not merely the absence of disease and disability*. Dubos' more realistically and thought-provokingly considers health to be "a *modus vivendi* enabling imperfect men [*sic*] to achieve a rewarding and not too painful existence while they cope with an imperfect world." (Dubos, 1968, quoted in Mausner & Kramer, 1985:4).

Critical traditions of epidemiology and social medicine began in the mid-19<sup>th</sup> Century with Rudolph Virchow who developed a concept of health as a public rather than individual responsibility. He maintained that governments have a responsibility to preserve the public's health, and that medicine must intervene in social and political affairs to prevent epidemics. (Craddock 2004:18).

In the late nineteenth century advances in bacteriology identified particular microorganisms associated with particular, for the most part, infectious diseases, most notably typhoid fever, cholera, plague and tuberculosis. For a disease-associated microorganism to be described as the agent (or etiological factor) of a particular disease it must be present (a *sine qua non*) in all cases of that disease. However an individual exposed to a disease agent may or may not develop the disease, and likewise in a population, exposure may or may not result in an 'outbreak' of the disease, or an epidemic. It is for this reason that it is a basic tenet of epidemiology that the disease agent is considered only one factor among many that determines whether disease results from exposure to the infectious agent.

Once accepted as the biological agent of the disease, the virus, bacterium or other entity is usually considered a necessary, and rarely if ever a sufficient, factor in the cause of that disease. A simple illustration of this tenet of epidemiology is the case of the tuberculosis bacillus. Many people are exposed to the bacillus, but only a proportion develop active tuberculosis. As Mausner and Kramer remind us, "It is important not to be led by the specificity of the association to regard any single factor as *the* agent of disease. The origins of disease are complex and we need to invoke an ecological model within which to develop ideas about causation." (Mausner & Kramer, 1985:26).

What Mausner and Kramer refer to as the ecological model is also known as the theory of the multiple causation of disease. This argues that a range of factors determine whether disease develops in the individual or a population. The relationship between the many factors is seldom a simple one. A causal factor may cause more than one disease. Co-factors may act independently, collectively or any mixed combination, with one or more of the combined factors having greater weight than the others. Suggested co-factors may be relatively insignificant while the significant factor goes unrecognised. The inter-relationships between factors may differ between populations, and between sub-groups of and individuals within populations; over short and long periods of time and distances in space, and have a significant influence on who develops a disease and who does not. Mausner & Kramer (1985:34-36) gives as an example of multiple causation the potato famine in Ireland in 1845 and 1846 where a crop disease, the weather, lack of food, population disturbance, migration to urban areas and consequent overcrowding and desperate conditions, and willful political neglect led to starvation and disease resulting in the death of an estimated one million people, an eighth of the population, and the emigration of an equal number.

Wieland Gevers also points to extrinsic factors. He refers to "the interaction of 'Nature' (seen as a changing rather than static, comprehensive genotype, from conception to birth to maturity to senescence) and 'Nurture' (the sporadic or repeated slings and arrows of nutritional, infective or accidental bad fortune) that gives each individual a current 'working mechanism'." But he also confirms that "external factors [must not be] forgotten as by far the most frequent root causes of altered structure and/or function [of the body]." (Gevers, 1995:1).

The complexity of these inter-relationships of factors becomes clear when the range of potential factors is considered. Mausner & Kramer (1985:28-32) discuss the numerous and varied factors affecting the development of disease divided into two customary groups. In this summary their examples are included and others have been added and concepts extended to cover considerations in the discussion of HIV/AIDS that follows.

Host or Intrinsic Factors include all factors in the state of the host (individual or community). These include *genetic variations* which may directly result in disease or disability, e.g. Down's Syndrome, or predispose an individual or group to certain diseases; *attributes resulting from past environmental exposure*, such as specific immunity acquired through immunization or previous natural infection which reduces the chances of contracting certain diseases (e.g. chicken pox and measles); *personality* which may influence susceptibility to certain diseases, as the link between personality traits and coronary heart disease; and *social class*, where past nurturing and living conditions determine intrinsic condition of the host.<sup>7</sup>

Environmental or Extrinsic Factors can be best understood as those to which the host (individual or community) is exposed. They include factors in –

*the biological environment*: infectious agents of disease, reservoirs of infection (other humans, animals, plants and the soil), vectors of disease (flies, mosquitoes and parasites before invasion), plants and animals (as sources of food and as therapeutic antibiotics and drugs, but also as disease-causing antigens); and in *the social environment*, which includes factors such as political and economic organization that determines social integration, conditions of peace or communal strife, disruption and war, mobility and migration, the full range of social health care (quality, access, research and control of environmental hazards); social customs, including diet, cooking habits and clothing, and social beliefs and education levels that impact on receptivity to new ideas, including health education; and the individual's or group's position in relation to the above factors; and in the *physical environment* that includes heat, light, air, water, radiation, gravity, atmospheric pressure and chemical agents of all kinds; purification of drinking water and treatment of sewerage; shelter and protection against extremes of weather control of indoor temperature and humidity, and ventilation; air and water pollution, whether from industry, traffic or the community's own living conditions, such as the use of wood and paraffin fuels for heating, lighting and cooking; and hazards such as fire and electrical shock.

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<sup>7</sup> These are distinct from current class position which, as part of environmental social factors, is an extrinsic factor.

These three discrete sectors of the environment (biological, social and physical) and the host (intrinsic) factor interact to influence the occurrence of disease. This is best illustrated by the *Mandala of Health* (Hancock & Parsons, 1985). The individual is at the centre of concentric circles. The individual refers to the whole person and includes the intangibles, spirit and mind, as well as the body. His/her context is a detailed representation of the groupings of extrinsic factors – environmental, physical and social. Social constructions of family and community, and personal behaviour and lifestyle, are all part of the social environment. All is encircled by the 'biosphere', the total ecological system, within which 'culture', ultimately infinite like space, is represented. (Figure 1, Page 17).

This social context is important, particularly to a Public Health understanding of the balance of forces that determines an individual's state of health. Individual and social context are in a dynamic equilibrium. "A potentially harmful change in any of the components of the system may not lead to detectable disease if the other parts of the system have the capacity to compensate for the insult. *If the existing balance is precarious, disease may develop after even a small insult.*" (Mausner & Kramer, 1985:32-33 – *my emphasis*). This also applies also by aggregation to the health of a community. Epidemics arise when the balance between multiple factors that determine a community's welfare is disrupted. As Virchow put it, "If disease is an expression of individual life under unfavourable conditions, then epidemics must be indicative of mass disturbances in mass life." (Quoted in Zwi, 1991:303).

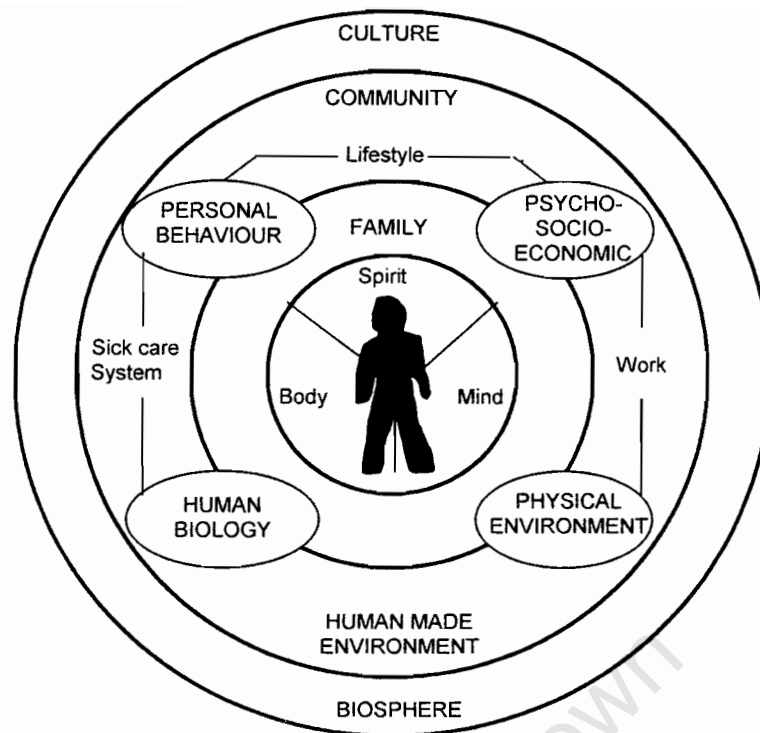


Figure 1. The Mandala of Health. Source: Hancock & Parkins, 1985

Sanders (1985:20-21) highlights the role of conditions arising from under-nutrition and associated vitamin deficiencies on health. They particularly affect the health of infants, growing children and pregnant and nursing mothers.<sup>8</sup> Under-nutrition is also a major contributing factor in communicable disease: by undermining natural responses to infection and reducing immunity created by infections, disease is more likely to develop. Disease agents occurring in air and water are more prevalent in poor and underdeveloped environments where basic amenities (clean water, improved sanitation and refuse removal) are non-existent or scarce, and overcrowding occurs.

Infections typically enter the body through natural portals such as the mouth and nose (airborne and ingested pathogens) and urinary/genital openings and anus (sexually transmitted infections – STI's). In good condition, the skin generally and mucosal membranes in these portals have defence mechanisms against infection, forming a barrier against environmental threats, like invading pathogens. (Tlaskalova-Hogenova, 2002). STI's typically disrupt the defence function of genital (and anal and mouth) linings allowing invasion by sexually transmitted disease agents.

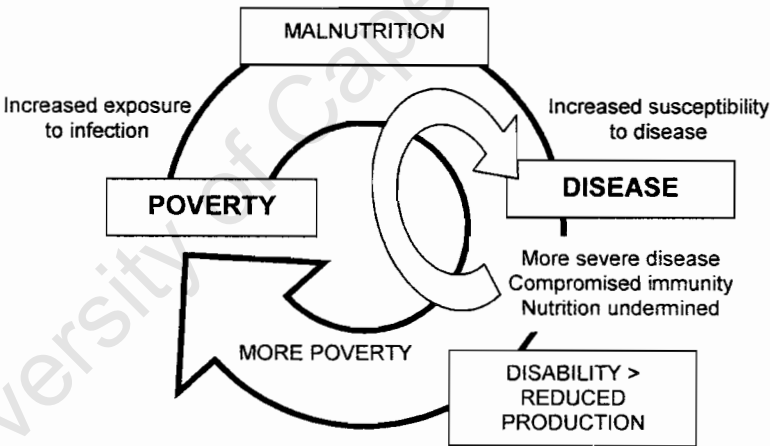
There is a body of evidence linking poor nutrition to impairment of the barrier function of the skin and mucous membranes. (Boelsma, 2001; Louw 2000; Tlaskalova-Hogenova with others, 2002; Donofrio 1994). Giam (1988) in a study in Singapore links improvements in housing, nutrition and general health to a reduction in skin pathologies. It is not necessary to understand the science of these studies to appreciate that the negative effect of poor nutrition on the defence functions of the skin and mucosal membranes will expose the individual to increased risk of successful invasion by disease agents.

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<sup>8</sup> These are of course non-communicable in the view of medical science and orthodox epidemiology, but persistent social deprivations mean that they are often vertically transmitted between generations. Maternal ill-health adversely affects the infant, infant ill-health affects the growing child, and cumulatively the adult is intrinsically less healthy. The cycle repeats when the next generation is conceived.

A further relationship between malnutrition and infection is the most often referred to in the literature. This is the impact of infection and disease on the malnourished individual once they have become infected. (Sanders, 1985; Doyal 1979). Malnourishment renders individuals more vulnerable to the initial transmission of infection. It is people living in the environmental conditions of poverty that are both more susceptible to initial infection and more exposed to sources of infection.

Poverty, as expressed in malnutrition, sets in motion downward spiral. This is often compounded by overcrowding which facilitates the spread of infections by increasing exposure to airborne, water borne and contact infection. Malnutrition increases susceptibility to infection and the chances of developing disease and its severity. The illness then renders the individual more susceptible to infection by further compromising their nutritional health and immune system. And the illness and accompanying disability undermine productive activity, further deepening poverty and malnutrition, repeating and reinforcing the cycle. This is represented by *Figure 4*, below.



*Figure 2 : The Cycle of Poverty and Disease*



Public Health has to work within the complex matrix typical of diseases in general. The multifactorial causation of disease, the different courses of diseases, and different responses between infected individuals make correct detection, identification of cause and prevention interventions a challenge. Social understandings of disease can assist or hinder receipt of the prevention messages and adoption or rejection of advocated prevention measures. Successful disease prevention and control of epidemics is dependent on well laid understandings of the multiple factors and their inter-relationships causing and spreading disease and driving epidemics. This was well put by Frost, who in 1936 wrote –

Epidemiology at any given time is something more than the total of its established facts. It includes their orderly arrangement into chains of inference which extend more or less beyond the bounds of direct observation. Such of these chains as are well and truly laid guide investigation to the facts of the future; those that are ill-made fetter progress.

(Quoted in Mausner & Kramer, 1985:1).

The importance in epidemiology of environmental factors to health, disease and epidemics has been identified here. HIV/AIDS and its epidemic are in this respect probably no different from other infections and epidemics. The dominant AIDS paradigm provides the 'chain of inference' on which interventions are based. Sexual transmission links to ideas about sexual behaviour (multi-partner sex), and the response is intervention to change sexual behaviour. However what is lacking in the dominant paradigm, are the insights drawn from public health. The missing link in the chain of inference for a better understanding of the HIV/AIDS epidemic in southern Africa is the environmental factors driving it. This dominant paradigm requires a further central component, here called the *risk environment*.

## CHAPTER 2.

### AIDS IN THE USA AND THE CONSTRUCTION OF THE DOMINANT PARADIGM

What is now called HIV/AIDS and is regarded as the medical condition central to the epidemic around the globe was first recorded in the United States in 1981. The Morbidity and Mortality Weekly Report (MMWR) of June 5, 1981, issued by the USA's Centers for Disease Control (CDC) and reproduced in Cochrane (2004:25), recorded the cases in the period October 1980 to May 1981 of "5 young men, all active homosexuals, [who] were treated for biopsy-confirmed *Pneumocystis carinii* pneumonia at 3 different hospitals in Los Angeles, California. Two of the patients died. All 5 patients had laboratory confirmed previous or current cytomegalovirus (CMV) infection and candidal mucosal infection."

*Pneumocystis carinii* pneumonia (*P. carinii*) is a rare and unusual form of pneumonia, particularly young men the age of these patients. The editor of the MMWR added the note –

The occurrence of pneumocystosis in these 5 previously healthy individuals without a clinically apparent underlying immunodeficiency is unusual. The fact that these patients were all homosexuals suggests an association between some aspect of homosexual lifestyle or disease acquired through sexual contact . . . . . All the above observations suggest the possibility of a cellular-immune dysfunction related to a common exposure that predisposes individuals to opportunistic infections such as pneumocystosis and candidiasis. Although the role of CMV infection in the pathogenesis of pneumocystosis remains unknown, the possibility of *P. carinii* infection must be carefully considered in a differential diagnosis for previously healthy homosexual males with dyspnea and pneumonia. (reproduced in Cochrane, 2004:25).

Cochrane, who studied the case notes of these individuals, remarks that far from being 'previously healthy', one was an injecting drug (ID) user; one had been treated with radiation for Hodgkin's disease, four had evidence of past hepatitis B infection, and all five reported using recreational inhalant drugs ('poppers'). The five patients had different histories of past infections with STI's and only two of the five were reported in the MMWR as having had frequent homosexual contacts with various partners. Yet in orthodox narratives on AIDS the only salient factor is the homosexual identity of these men. Their different medical histories, and their implications, were disregarded in understanding their illness. (Cochrane, 2004:24).

In her chapter '*The Medicalisation of Gay Desire in San Francisco (1978-1983)*', Cochrane (2004: 21-54) records the concern from the mid-1970's in public health circles about sexually transmitted diseases in the USA and the emphasis on homosexuals in much of this. The (US) Public Health Services had issued ominous warnings of sex-related health problems. A 1977 survey by the CDC had concluded that homosexual men were at high risk for major disease, and the agency's publication "*Health Objectives for the Nation*" in 1979 had highlighted sexually transmitted diseases. (Cochrane, 2004:21-24). Dr. Selma Dritz, of the San Francisco Department of Public Health, had stated in 1980 that "Too much is being transmitted [among gay men in San Francisco], we've all got these diseases going unchecked. There are too many opportunities for transmission that, if something new gets loose here, we're going to have hell to pay." (Cochrane, 2004:21).

It is against this wider background of public health concern that Cochrane questions the editorial note from a social perspective. "Given the state of knowledge and medical scholarship on gay men (in the USA) in the late 1970's and the alleged hyperendemic levels of STD's, meningitis, hepatitis B, cytomegalovirus, gay bowel disease, and so on within their communities – how is that these men with pneumonia were, and continue to be, represented as 'previously healthy'?" (Cochrane, 2004:24-25).<sup>9</sup>

What went forward to inform the designation of future AIDS patients alongside the clinical factor (the compromised immune system of the patients, that explained the incidences of unusual opportunistic infections and their course as diseases unresponsive to usual therapies, to eventual mortality) was the particular common factor of the patients all being homosexual men, a social factor. These two factors, one social, one clinical, defined the medical condition labeled gay-related immune deficiency (GRID) that became the subject of intense surveillance<sup>10</sup> in San Francisco in the summer of 1981. (Cochrane, 2004:26).

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<sup>9</sup> Cochrane (2004:29-30) also includes informative testimony of diseases among homosexuals from Tim Pilland, a public health practitioner

<sup>10</sup> "Surveillance is a type of observational study that involves the continuous monitoring of disease occurrence within a population." (Thacker, 1983:1181).

What followed was a search for homosexuals with immune deficiency and what was found – not surprisingly if the prevalence of infections previously detected among homosexuals did indeed contribute to immune deficiency – was exactly that. This is not to argue that these scores and then hundreds of patients were not suffering from AIDS – indeed most went on to die from it – but merely to point out that the essential question, ‘why?’ remained unanswered when the inadequate and judgmental reply, ‘because they are gay’ was accepted as a substitute for a meaningful answer.

This definition of the medical condition, biased by the social factor, resulted in the common appellation ‘gay plague’ when surveillance indicated its presence in populations of major cities in the USA and Canada and then Western Europe. In San Francisco by December 1982 a further 94 cases had been recorded, including the first case in the USA associated with a blood transfusion; in January 1983 a new surveillance category was added for female partners of ID users and bisexual men, recorded as ‘heterosexual partners’ of the aforementioned. (Cochrane, 2004:29). By July 1992 on the basis of reported cases across the United States the ‘Four H’s’ – homosexuals, heroin addicts, haemophiliacs and Haitians – had been identified as categories of persons at increased risk for the condition. ‘Risk Groups’ entered the AIDS lexicon as a fundamental tool not just of record but also explanation.

Cochrane’s study (2004:25-26) uncovers how between 1981 and 1985 the CDC’s methodology would not include anyone who could be labeled homosexual in any other risk category, thereby under-representing and de-emphasising every patient category except homosexuality. Injection drug (ID) users and recipients of infected blood/blood products who admitted to homosexual contact, perhaps only on the basis of a few and infrequent same-sex acts, would be included in the ‘homosexual’ category and not appear statistically in any other. Just being a homosexual became the primary indicator of risk, resulting in a distorted picture of the epidemic in its first five years, the association of homosexual preference, *gay*, with AIDS, and a legacy of misunderstanding that still influences thinking about HIV/AIDS today.

In March 1983 AIDS was officially declared a 'disease of note' in California making it a legally reportable condition. In his memorandum of notification, Dr. James Chin, chief of the Infectious Disease Section for the California Department of Health Services, provides an early indication of hypotheses regarding the agent of the disease. "Up to now [AIDS] has been almost exclusively reported in population groups who may have some depression of their immune system by virtue of high infection rates with disease agents which can temporarily depress certain immune factors . . . suggest[ing] that some pre-existing immunologic deficiency or depression in the host is necessary for the development of AIDS." (quoted in Cochrane, 2004:30-31).

This observation, taken together with the public health concerns pre-dating the first cases of AIDS about the high prevalence of certain infections in the gay population, might have led to explanations of AIDS built on a clinically-based development of a detailed understanding of the medical relationship between those *other* 'high infection rates' and immune suppression and deficiency. If the significance of this powerful evidence from within the gay community had been recognized and to it added the significance of the poverty and background health conditions of Haitians and of patterns of ill-health amongst ID users, initial explanations of causality may have been more nuanced. If, moreover, the category 'homosexual' had been analysed, and the range of sexual behaviours, which include celibacy, been acknowledged, this may have led to a better scientific hypothesis. A very different understanding of AIDS may have emerged.

### **The Social Use of AIDS**

Instead, as has been noted, the definition of the condition AIDS emphasised the social risk factor of a stereotyped homosexual activity. The methodology of surveillance in the first five years of the epidemic replicated this bias in the data gathered, reinforcing the definition of AIDS as being predominantly a homosexual disease. Murray and Payne (1989:115-128) discuss the early social classification of AIDS in America and note the relationship between “the zeitgeist of ‘sexual counter-revolution’” and the way in which AIDS would be interpreted.

In the USA, attitudes to lifestyle choices and sexual behaviours had a profound influence on how the medical condition AIDS was defined, on the epidemiological research that developed an understanding of it, and on the measures introduced to control and prevent its spread. That these wider contemporary social concerns had a significant impact on the construction of AIDS should not come as a surprise. In his significant study of the social history of venereal disease in the United States since 1880, Brandt draws attention to the association of venereal disease with dirt and uncleanness; to its use as “a symbol of pollution and contamination [and] a sign of deep-seated social disorder, a literalisation of what was perceived to be a decaying social order”; and to the fact that venereal disease “came to be seen as an affliction of those who willfully violated the moral code, a punishment for sexual irresponsibility.” (Brandt, 1987:5). Although it had been known from the late nineteenth century that venereal diseases were caused by microorganisms, these moral associations had persisted to enjoy a revival in a USA confronted with the new disease associated with sexual activity<sup>11</sup>, AIDS. Early explanations were based more on assumptions derived from attitudes than proven science.

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<sup>11</sup> It is important to remember that in the early years of AIDS disease, its transmission and aetiology were not understood. Mausner & Kramer writing at least four years after the first cases, are correct to cautiously refer to “a new condition, AIDS” (1985:270) that “may fall into this category [sexually transmitted diseases].” (1985:274).

These were the Reagan years, a time when a movement to re-establish 'American Family Values' was underway. The Reagan years was also a period of reaction against the 'sexual revolution' of the 1960's and 1970's. The Stonewall Riot in New York in 1969, led by homosexuals against their oppression by society, had initiated a transformation of gay men's perceptions of themselves that set in motion a fundamental challenge to society's view of homosexuality as abnormal. In 1974 the American Psychological Association had removed homosexuality from its list of psychological pathologies, but, as discussed by Cochrane (2004:13-20), by the late 1970's around issues of (gay) sexual health and then in the 1980's around AIDS specifically, a construction of homosexuals as medically pathologised was being built.

Central to the constructionist view is the notion that ideological context shapes ideas of disease, in this case HIV/AIDS. Members of the primary risk groups (homosexuals and ID users), whether infected or not, were represented as responsible for the spread of the disease. 'Risk behaviour' was represented as the choice of members of those risk groups and entered the AIDS lexicon as the second tool of explanation, with AIDS patients regarded as (deservedly) responsible for their own condition.

As Cochrane points out "some representations of AIDS and AIDS patients are made *only* for the cultural work they do, as there is little empirical evidence to support them." (Cochrane, 2004:13; *emphasis in original*). A hundred years after the social discourse on venereal diseases and the sexual health of the nation [Brandt, 1985], the same or similar associations were still current in discourses of a nation confronted with a new sexually transmitted disease AIDS. The context now was concern at the course of the sexual revolution and reaction against the recent 'liberation' and assertiveness of gay men (and to a lesser degree, lesbians) and aspects of women's liberation.

Brandt writes (of venereal disease in nineteenth century USA) that dominant contemporary "attitudes and values [affected] the perceptions of its pattern of transmission [and understandings of] its epidemiological nature" (Brandt, 1987:5). Cochrane makes a similar point about AIDS in the USA a hundred years later when she writes that "power and discourse fundamentally shaped the construction of populations at risk for contracting AIDS in the first years of the epidemic." (Cochrane, 2004:13).

The impact of this *social* understanding on scientific enquiry is clear from the 1984 proposal for a cohort study of AIDS disease in San Francisco by Dr. Warren Winkelstein Jr., Professor of Epidemiology at the University of California in Berkeley. Summarising what was known about AIDS at the time, he wrote :

As in other communities where AIDS has assumed epidemic status, incidence has been almost exclusively in homosexual males. The evidence that a causative agent is transmissible by exchange of blood or bodily secretions is now substantial. However, the natural history of AIDS is not well understood, the agent has not been identified, and host susceptibility factors *other than promiscuity* have not been determined.

(Quoted in Cochrane, 2004:36 – *my emphasis*).

Risk came to be associated with behaviour and with this came a moral judgementalism. The CDC surveillance data (biased by a categorization methodology that de-emphasised and under-represented every patient characteristic except homosexuality) presented "that which is most 'sinful' . . . to be the most dangerous" (Lauritson, 1985, cited in Murray & Payne, 1989) and "as it was written and read, the wages of the sin of anal sex was death." (Cochrane, 2004:14). In the USA a popular understanding of the new disease had been constructed, *before* the development of a complete scientifically-based aetiological theory of AIDS, that construed it as a 'gay plague' and considered its mode of transmission to be overwhelmingly through homosexual anal sex. This despite the fact that the texts of case studies published in the MMWR and medical journals show that "20 percent of early AIDS cases were among heterosexuals, and a considerable number of the earliest homosexual AIDS cases were IV drug users." (Cochrane, 2004:14).



### **AIDS beyond the USA**

By the time in 1986 that the HI Virus was accepted by orthodox scientific opinion as the cause of AIDS, the understandings already constructed around 'social *uses* of the disease' in the USA of Ronald Reagan, in the preceding five years, were informing medical and public approaches to the disease wherever in the world there were outbreaks of disease that could be identified on the basis of observation of clinical symptoms as AIDS.

The 'gay plague' explanation had imbedded within it the idea of punishment and expression of divine wrath. It also carried an association of gays with rats or locusts and, like any plague of them, a threat to social health and well-being. It was a construction with powerful 'othering' *social* value. The 'gay plague' did not in any rigorous scientific sense exist then or since. AIDS as then understood, now HIV leading to AIDS, was and is a sexually-transmitted infection. One does not need to know *why* or *how* it came to infect the first homosexual man to be infected to appreciate that having done so, it would spread among members of a community whose sexual activity was, by definition, confined largely amongst themselves, and only slowly spread to limited numbers of persons not of that community. It is however suggested as an hypothesis here, that the first point source infection of a homosexual man may have occurred because of his pre-existing and past infections.

Just as their behaviour had been identified as *the* risk factor for United States homosexuals, so homosexual activity was seen as the dominant factor in the occurrence and transmission of AIDS wherever in the world it occurred amongst gay men. Bisexual men and men who have or have had sex with men provided an explanation of the relatively small number of cases amongst women, sexual partners of these men, in the absence of other transmission routes such as ID use or receipt of infected blood or blood products.

Wherever the surveillance data corresponded to the expectation of the majority of cases occurring amongst homosexual men, the dominant understanding of AIDS as gay-related remained intact. This was the case in all developed countries: those of Western Europe and also in Canada, Australia and New Zealand where persons of predominantly European descent were the majority and there was the shared language, English, and with it a broadly common so-called 'western culture'. It was also the case initially in urban centres of less developed countries, amongst those whose lifestyle in significant ways approximated that of the developed countries. A 'culturally determined' explanation of AIDS constructed first in the USA found a ready acceptance in these contexts in many ways similar to the USA.

### **AIDS and Haitians**

Murray and Payne (1989) consider in detail the case of the Haitian AIDS risk category in the CDC data. In the USA, Haitian ancestry or origin<sup>12</sup> determined the categorization, irrespective of sexual or ID use behaviour. One might speculate on what conscious or unconscious racism informed this choice of methodological practice, but in due course this appellation was dropped when political pressure was applied to eliminate this risk group that was singularly indicted for "who they were rather than what they did." (Murray and Payne, 1989:122).

The 'gay plague' construction met its first challenge in 1982 with the identification of a significant number of Haitians in Haiti manifesting the disease. An explanation was required for a significant number of AIDS cases across the population of a nation with a strong cultural taboo against homosexuality and no identifiable gay community, and very little intravenous drug use. Farmer (1992) records how in the USA, informal and fundamentally racist notions of voodoo blood rites and sexual practices were resurrected in the popular press.

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<sup>12</sup> Murray and Payne (1989) record that there were about a million Haitians resident in the USA at the time. Many were migrant workers, sending remittances back to families in the desperately poor Caribbean island of Haiti. The definition of Haitians as a risk group resulted in Haitians in the USA suffering severe discrimination in housing, employment and access to public services such as education and employment, and by the US Immigration Service.

At the same time epidemiologists provided explanations founded on the popularity of Haiti as a tourist destination amongst American gay men and a 'hidden' minority of Haitian men who had sex with them. Epidemiological research in Haiti identified the significant concentration of cases in an area of the capital, Port-au-Prince, associated with prostitution, reinforcing the 'behavioural risk' paradigm. Despite the recorded prevalence and intensity of the diseases of poverty afflicting most of the island's population, environmental factors did not feature in the explanations. This despite the life of the Haitian peasant being one of "abject misery and a rank familiarity with death." (Farmer, 1992:17). Fifty per cent of all deaths were amongst children under five and nearly 75 percent of these deaths were associated with or caused by malnutrition. Tuberculosis was the leading cause of death amongst adults. (Fielden *et al*, 1981; Weise, 1971).<sup>13</sup>

As in the case of gay men, so in the case of Haiti. Explanations focusing on supposed excessive (to an idealized western norm) sexual behaviour were rushed to explain the growing numbers of cases. The search for other factors that might have contributed to vulnerability was not even begun.

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<sup>13</sup> Judith Head (n.d.), drawing on the public health and historical literature on TB, argues that TB is a quintessential disease of poverty. Infection and mortality rates increase dramatically as social conditions deteriorate and drop rapidly with even a small improvement in nutrition and housing. Not surprisingly there is a sharp social class gradient to TB mortality. Head refers to Krieger and Moss (1996) who note that a large scale study of ten states in the USA in the 1930's found a mortality rate of 18:100 000 among lawyers and 282 per 100 000 among manual labourers.

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### Scientific Development and Discovery of the HI Virus

The eventual acceptance of HIV as the causal agent of AIDS was the outcome of a quite remarkable process. Cochrane (2004:11-12) summarises an account by Feldman (1992). This recounts the competition between Robert Gallo and Luc Montagnier – and between their biomedical research institutes, the prestigious National Institutes of Health in the USA and Pasteur Institute in France respectively – to have recognized, as the causal agent of AIDS, the retroviruses<sup>14</sup> they had independently identified in the sera of AIDS patients in 1983/4. This competition came to a head when in April 1984 a spokesperson for the US Department of Health and Human Services stated at a press conference that the HTLV-III virus was “the probable cause of AIDS” and Robert Gallo its discoverer. The popular and scientific press promptly described HTLV-III as *the* AIDS virus and Gallo as *the* discoverer of the AIDS virus.

Montagnier challenged this Gallo/U.S. ‘fiction’, amidst claims that HTLV-III was Montagnier’s LAV appropriated and re-named by Gallo. This challenge was played out in legal venues and before multiple commissions on scientific integrity in the United States. In 1986 there was agreement to call the virus the Human Immunodeficiency Virus (HIV). Further court battles were avoided when in 1987 the heads of state (Reagan for the U.S.A. and Chirac for France) reached a legal settlement that the proceeds of patents for the antibody test<sup>15</sup> were to be divided equally between the two countries. As part of this settlement, Gallo and Montagnier were to, and did, co-author a chronological history of AIDS research up to March 1985, and also agreed “not to make nor publish any statement which would or could be construed as contradicting or compromising the integrity of said scientific history.” (quoted in Feldman, 1992:116).

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<sup>14</sup> Gallo’s candidate retrovirus was the human T-cell leukaemia virus-I (HTLV-I) and Montagnier’s the lymphadenopathy associated virus (LAV), subsequently accepted as one and the same virus.

<sup>15</sup> With a world-wide market for repeated tests on the many millions of people then predicted to be potentially at risk of HIV, the financial value of the patent rights to their holder was, and is, enormous.

Cochrane concludes the account as follows –

“But most important, the settlement stipulated that no party to the agreement could discuss the origin of the controversy surrounding the discovery of LAV/HTLV-III/HIV nor independently author an alternative history other than that ‘sanctioned as the authoritative narrative by the out-of-court patent settlement.’ This messy and historically contingent account of the discovery of HIV [as published in a special issue of *Scientific American* in 1988] subsequently became the official history of the chronology of AIDS research in the early years of the epidemic, ‘closing the book on the issue . . . accepted as fact, it need never be referred to again.’ ”

(Cochrane, 2004:11-12; the sections in quotation marks are from Feldman, 1992).

### Reflections on this Construction of HIV/AIDS

A number of points can be made from this episode. Firstly, although the political imposition of an authoritative narrative from outside the scientific community is unusual and undesirable<sup>16</sup>, most biomedical researchers accepted it as “an exceptional and aberrant episode; one that primarily exemplified a ‘political dispute’ that had little to do with ‘good science’”. Furthermore, the personal and professional differences between Gallo and Montagnier were considered irrelevant to the immediate scientific problem of continuing to unravel the mysteries of HIV and explain how it causes AIDS.” (Cochrane, 2004:12).

Secondly, it provided a key reference point in the development of AIDS research, and a locus at the essential centre of that research, for many AIDS dissidents and other scholars who challenge authoritative narratives of the emergence, cause, and epidemiology of AIDS. Had the dispute been settled within the scientific community and ‘normal science’, the room for aggressive dissent within the scientific and AIDS communities might have been less, and public learnings about HIV/AIDS more secure against unsettling challenges. When voicing their unorthodox views, dissident scientists exploit the unorthodox way the HI Virus came to be recorded as the causal agent of HIV/AIDS, to undermine acceptance by an already skeptical public of the orthodox science of HIV.

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<sup>16</sup> “One of the strongest, if still unwritten, rules of scientific life is the prohibition of appeals to heads of state or to the populace at large in matters scientific.” (Kuhn, 1970:168).

Thirdly, the episode provided a rare insight into the processes of scientific discovery and development of what the wider public receives as discovered knowledge. Here an unusually public disagreement in scientific research led to the establishment of fact by an engineered and bilateral inter-state legal settlement. This was not a crisis within a scientific paradigm leading to a scientific revolution in the sense that Kuhn (1970) describes dramatic developments in scientific knowledge. Rather it was the product of the personalities of two scientists at the cutting edge of their common field of research. The resolution was necessary in the interests of the prestige of the two national research institutes and the states behind them; the returns on investment and future profits of pharmaceutical companies that together with states were funding the research; and to establish a basis essential for continued ordered research and the flow of funds for it.

The view taken here is that prior to 1986 and the Gallo/Montagnier settlement there was no established paradigm for AIDS science but that contesting hypotheses and theories, with varying degrees of scientific validity, were nonetheless engaged in a common project to construct a full aetiology of AIDS. Research funding, with an eye on future profits from yet-to-be-discovered testing kits, therapeutic drugs, and (joint first prize!) a cure and a vaccine, flowed into bio-medical research, within which field virologists, on the basis of research already underway, took a lead. The 1987 settlement established a paradigm without the usual peer review and wider acceptance tests paradigms would normally have to survive.

The 1987 settlement had the following important outcomes –

1. it provided a paradigm for the bio-medical research community and largely determined the future direction of mainstream bio-medical research and stabilized the flow of funding for it;
2. it completed the puzzle of a basic aetiology of HIV/AIDS that has had and continues to have a profound influence, for better and worse, on research and practice in disciplines other than bio-medicine, including public health and the social sciences;
3. it established in wider society an understanding of HIV/AIDS which has informed (and, denialists would argue, misinformed) individual and collective responses to the epidemic; and
4. it led to the widespread and eventually global use of antibody tests<sup>17</sup> that generate the surveillance data recording the progress of the epidemic and permitting predictions of its future course and consequences.

Designed by and for the mainstream bio-medical research establishment and the commercial interests behind it, it has not surprisingly served them well. Normal scientific research (as understood from Kuhn, 1970) by the favoured specialist scientific community could continue within its now established paradigm with confidence and funding.<sup>18</sup>

The aetiology established in 1987 was over-determined by the biomedical science and the interests behind its voice in the process of settlement and the exclusion of other voices. Yet because of the high-level political nature of the settlement 'its science' became the AIDS paradigm not just for its authors and their peers but for 'everyone'. While the basic aetiology established in 1986 was and remains an invaluable informative for AIDS researchers, practitioners and activists, in and outside the discipline of medicine, the settlement's exclusive emphasis on the role of HIV in AIDS and the epidemic (to the exclusion of a range of other factors that were present in the first cases and which merited serious studies among these and the 'Haitian' cases) has been problematic.

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<sup>17</sup> Antibody tests were first introduced in surveillance in the United States 1985. [Cochrane, 2004:32]. In 1986 they were being used in limited surveillance studies worldwide but not until 1987 were they in use in ongoing national and global surveillance of the epidemic.

<sup>18</sup> An example of this is given in a note in Cochrane (2004:197): Gallo went on from the National Institutes of Health to establish his own \$12 million commercially-funded AIDS research programme at the University of Maryland.



The settlement claims that HIV is the singular, necessary and sufficient cause of AIDS, an hypothesis now embedded in the orthodox aetiology of HIV/AIDS as an incontrovertible fact. Epidemiology defines a disease agent as that which must be present (a *sine qua non*) and hence a necessary cause of disease. (Mausner & Kramer, 1985:28). However, seldom is a disease agent a sufficient cause of disease. According to Mausner and Kramer (1985:28) it is very important not to be led by the specificity of an association to regard any single factor as the sole causal agent of disease. Epidemiological theory and practice considers the multiple causation of disease; and emphasizes the role of co-factors in determining the susceptibility of the host to infection, the course from infection to disease, and the course of the disease itself. Public Health discourses on the ecology of health have located individuals and communities in a broad matrix of multiple, interacting factors, which together in complex mixes promote epidemics.<sup>19</sup>

Yet despite this wisdom, at a critical moment in the development of an understanding of what has become humankind's most devastating epidemic, a solution to part of the puzzle was announced, with the twentieth century's equivalent of an imperial edict. With that edict came, like Moses' tablets, a narrowly biomedical aetiology that appears to ignore that broad wealth of epidemiological experience, focuses on the virus and the individual-in-isolation as its victim, and elevates the biomedical discipline above all others. This development completed the dominant paradigm for HIV/AIDS by adding the final component, the singular, necessary and sufficient role of the HIV Virus.

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<sup>19</sup> For an excellent overview of epidemics, see Mausner & Kramer [1985]; for epidemics in South Africa, see Katzenellenbogen [1991].

This critical view of the dominant HIV/AIDS paradigm through the lenses of the social construction of disease and of epidemiological theory raises questions about its capacity to explain the epidemic. The elevation of the virus to the status of singular necessary and sufficient cause of the disease diminishes the influence of other factors on the epidemic. Environmental factors such as the pre-existing health condition of the early homosexual AIDS patients and the impact of Haitian poverty on background ill-health of Haitian cases were overlooked in favour of explanations rooted in stereotypes of sexual behaviour. Had the medical appraisal of the pre-existing health condition of early AIDS patients, homosexual and Haitian, been central to information collected, it may be that background ill-health, rather than sexual behaviour, would have been identified as a significant indicator of susceptibility to AIDS disease. Prevention measures to tackle the epidemic thus defined would have required measures to address socio-economic inequality and would have served a radically different social agenda.

In the event, the possible contribution of pre-existing or past infections or disease to the compromised immune systems of patients rendering them more susceptible to HIV infection was not central to the research that followed. This concentrated on the virus not on the host.

The current orthodox understanding of HIV/AIDS completed in 1987 established the paradigm that has informed a consistent practice of surveillance, control and prevention since. Over-informed by the biomedical contribution and constructed around risk groups and risk behaviours, it has been and continues to be the model applied in all parts of the world despite the differences in manifestations of the epidemic in different countries that became more significant over time. It met its greatest challenge in Africa where in about the same year, 1987, the devastating scale of the AIDS epidemic on that continent and its defining heterosexual transmission mode were becoming apparent.

## **CHAPTER 3.**

### **AIDS IN SOUTH AFRICA AND THE ADAPTATION OF THE PARADIGM**

All too often in South Africa explanations for the spread of the HIV/AIDS epidemic, in popular discourse but advanced also by some of the medical fraternity, have been based on assumptions about the way different people behave. Faced with a very different epidemic in much of sub-Saharan Africa, heterosexually spread and widespread across populations of the region, the behavioural explanations of the epidemic in the dominant paradigm readily allowed that different sexual behaviours of African people must account for the greater epidemic in the region. (Head, 1992). In South Africa these ideas soon superseded the 'gay plague' explanations that no longer sufficed when the epidemic was detected outside the largely white homosexual community and amongst the largely heterosexual African population, both South African and migrants from beyond the country's borders.

#### **The 'Gay Plague' in South Africa**

The first two reported AIDS cases in South Africa were of white homosexual men diagnosed in December 1982. "A newspaper headline announced 'Gay Plague Hits South Africa' and intimated that homosexual men were polluting white society." (Jochelson, 2001:172). The initial assumption, probably correct, was that AIDS had been introduced to the white gay community in South Africa from either the USA or Western Europe. As in Los Angeles, "the only salient commonality that is adduced in orthodox narratives [of these early AIDS cases] is the homosexual identity of these men" (Cochrane, 2004:24-25); other factors such as the source of their infection and their prior medical histories and health statuses are absent from the public narrative. That the patients were homosexual was and remained sufficient explanation of their disease.

The early understandings of AIDS in South Africa were reproductions of the dominant American understanding that in a sense crossed the intervening ocean with the infection. It served not only to notionally contain the disease, but also, as long as AIDS was largely confined to the homosexual community, the representation of AIDS as the gay plague sufficed and served a social purpose. AIDS affected members of 'risk groups' defined by lifestyle choice and behaviour. All who shared that behaviour and did not change it were at risk. This allowed those who did not belong to a 'risk group' to imagine that they were immune from infection. Members of the defined risk groups, infected or not, were stigmatized and often blamed for the spread of the disease. Those infected were held to have brought their suffering on themselves by their immoral and antisocial behaviour. (Walker *et al*, 2004:12-13). Homosexuality was illegal in South Africa in the 1980's and the gay community kept a low profile. As in the USA, there was a similar current of anxiety about the collapse of sexual morality and family life among the conservative white majority and government. In addition by the later 1980's there was growing concern amongst whites at "the disintegration of white political power, economic vulnerability and the desegregation of society." (Jochelson, 2001:172).

As in the USA, 'information' about AIDS in South Africa served a prior purpose:

to cultivate 'a lifestyle based on high moral standards, chastity and being aware of the ideal sexual relationship: one man with one women'. AIDS was seen as a moral issue that required a moral solution. The talk of morality as the basis for a healthy society reflected political unease in the white community that apartheid was gradually unraveling. With the political future uncertain, a strong, virile and moral populace was essential. (Jochelson, 2001:172).

Government policy towards the epidemic from 1985 to the end of the decade reflected and reinforced this approach. "Educational material for whites emphasized the significance of long-term, monogamous relationships, while material aimed at the black community focused on debilitation and death. Many people were left more confused than informed about the causes and prevention [of AIDS]." (Jochelson, 2001:175). In 1987, the Director General of the Department of Health stated publicly that the Department would do nothing to help the homosexual community as "homosexuality is not accepted by the majority of the population" and it was the community's "own affair". (quoted in Jochelson, 2001:175). The gay community itself developed education and support structures based on those in the American gay community, with some support from only the largest municipalities' health departments.

### **AIDS and 'Black' Africa'**

Media focus soon shifted to evidence of a developing major heterosexual AIDS epidemic in Africa; for 'white' apartheid South Africa this was 'black Africa' to its north. Because in Africa, AIDS was spreading equally in the female and male population, the 'explanation' based on judgemental and moralistic assumptions of 'promiscuous homosexual behaviour' could not be sustained. Heterosexual transmission had to be explained while maintaining the social value of the notion that AIDS afflicted those whose behaviours brought it on themselves. Resurrecting popular notions of unusual sexual practices and 'promiscuity' among Africans served this purpose. Africans became a new *risk group* and assumptions about African sexual norms the corresponding *risk behaviour*. This represented a contextual application of, and was no fundamental challenge to, the understanding of AIDS constructed in the earlier 'gay plague' years. The dominant AIDS paradigm, a uni-causal explanation which saw transmission of the virus through (excessive and/or deviant) sexual behaviour, remained intact.

In Africa “the disease [AIDS] seemed to be spread heterosexually [and initially] all Africans were labeled a ‘risk group’ and assumed to be sexually licentious.” (Jochelson, 2001:172). This characterization was essentially a case of fitting what was observed to a pre-existing model of explanation (Kuhn, 1970). AIDS, according to the dominant paradigm, had to afflict members of risk groups. The evidence of large numbers of Africans, male and female, with AIDS, meant that Africans become a new risk group. Merely being African qualified one for inclusion in it. To justify this position, and protect the integrity of the dominant paradigm, Africans had to be ascribed a behaviour corresponding to the homosexual’s sexual practices. Alleged promiscuity<sup>20</sup>, licentiousness and ‘abnormal sexual practices’ amongst Africans provided an explanation and the justification. (Head, 1992; Jochelsen, 2001).

Africans were at risk because of *who they were*, an awkward construction akin to that faced by the paradigm when AIDS first appeared amongst Haitians. The indefensible initial categorisation of all Haitians as a ‘risk group’ was soon corrected. When it came to Africans on their own continent, however, the notion of all Africans as ‘risk group’ was somehow acceptable. As well as the connection to ‘abnormal sexual practices and rites’, a further parallel is the similar concerns and responses of the USA to labour migrants from Haiti and of apartheid South Africa to migrant labour from African countries to its north; both labour sources being seen ambiguously as necessary but also a threat of AIDS infection.

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<sup>20</sup> Promiscuity, as Schoepf (2004:19) points out, is “a notion so imprecise and value-laden that it cannot be used scientifically.”

In South Africa, the ruling class and (white) public concern had been pre-occupied with the country's economic vulnerability since the onset of recession in the 1970's. In the second half of the 1980's AIDS and its rapid spread southwards through Africa heightened the sense of economic crisis and anxiety about dependence on African migrant labour from beyond the country's borders. The apartheid regime exploited popular fear of the fatal disease AIDS for historically contingent social and political purposes through the 1980's. Such limited understandings of AIDS as were promoted in the African population were designed to engender fear of, and isolate, the liberation movement's cadres entering the country from countries to the North in growing numbers in the 1980's, and in the white population to discourage multi-racial socialisation and arrest the trend of illegal black occupation of accommodation in 'white' inner city areas. (Jochelson, 2001, 173-174; Walker *et al*, 2004).

Given this racial dimension of 'othering' in South African official responses to AIDS, and in international discourses on AIDS in Africa, it was to be expected that racial and political attitudes specific to apartheid South Africa would strongly influence popular attitudes to AIDS and reactions against the official representation of it.

Some blacks argued that whites had deliberately spread the disease and that the promotion of condom use was a racist device to curb the growth of the African population . . . encapsulated in the popular expression of the time: that AIDS stood for 'American Invention to Destroy Sex'. Some whites saw AIDS as a disease that was restricted to black people, while a deeply racist fringe celebrated its destructive impact on the African population. (Walker *et al*, 2004:13).

AIDS was again being put to social and political uses, and again mobilising pre-existing popular concerns in society to inform understandings of a new disease. Foucault (1980) argues that the modern state relies on social and scientific discourses to 'define' normal behaviour, through which individuals come to know themselves as subjects. Vaughan (1991) adapts Foucault's argument to the colonial situation. She suggests the colonial state is more concerned with defining and pathologising the normal African than with distancing the abnormal one. This colonial construction remains in the view that Africans in general, through their 'normal' sexual behaviour, are predisposed to contracting and spreading the HIV infection.<sup>21</sup>

### **The 'African' as 'Other'**

It has been suggested above that different attitudes and responses to AIDS in Africa and in the West, and within South Africa between whites and Africans were founded on the pre-existing perceptions of the African as 'the Other'. This idea will now be discussed and developed. Jochelson (2001:6) argues that Africans were 'othered' on the basis of their skin colour, subjugated status and cultural difference. Just as syphilis in the African population had been seen as a consequence of an immorality characteristic of Africans in general, a sign of their difference from whites, so the heterosexual epidemic of AIDS came to be seen a result of sexual behaviours innate to Africans, while its manifestation among whites was seen as exceptional. Packard points to how even physiological arguments (for example, it was suggested that Africans had 'no experience' of TB and a consequent lack of physiological resistance to it) were marshaled alongside behavioural ones to define the African "as essentially different from the European, as the 'other', [and place] responsibility for the disease on the victim." (Packard, 1989:2).

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<sup>21</sup> Jochelson argues, in her study of syphilis and racism in South Africa during the nineteenth and early twentieth centuries that these processes were underway in that epidemic. She points out that medical explanations of disease among Africans drew on evolutionary theory, sociology or social anthropology to help explain its prevalence and spread, and in doing so validated theories about racial difference. (Jochelson, 2001).



These views drew on discredited colonial anthropological studies. The resurrection of colonial representations of Africa and Africans in this early period of attempts to explain the heterosexual nature of the AIDS epidemic in Africa are discussed in Butchart's historical review (1998) of European constructions of the African body, Duh's consideration (1991) of the causes and origins of AIDS amongst blacks, and the Chirimuuta's highly critical exposure (1989) of the racism implicit in many explanations of AIDS in Africa. Hilary Standing's early bibliography of studies of AIDS in Africa, produced for the British Overseas Development Administration, is a prime example of the evocation of the exotic and unfathomable behaviours and practices. (Standing, 1989).

That this happened to post-colonial Africa in the late twentieth century, in the face of a devastating epidemic requires explanation. In South Africa, apartheid racism and the ruling class's and the white minority's vulnerability in the face of change provide a sufficient explanation. But for the currency these ideas re-assumed internationally a more considered explanation is required. It is suggested here that the resurrection of these associations lay in the need to defend the dominant AIDS paradigm with its lexiconic *risk group* and *risk behaviour* explanations.

As has been argued the dominant paradigm located AIDS in a *risk group* engaged in *risk behaviour*. In Africa it faced the challenge of a widespread and apparently heterosexually transmitted disease, explicable only by the constitution of 'Africans' as a *risk group* by virtue of a *generalised 'African' risk behaviour*. Kuhn points out that scientists do not normally aim to invent new theories and normal science is directed to the articulation of those phenomena and theories that the paradigm supplies." (Kuhn, 1970:24). Any alternative explanation would have required a new or substantially amended paradigm.

Packard in 1989 wrote that "One can only speculate as to why, given all of the social and economic factors which distinguish African populations from those in the West, researchers chose to focus on sexual promiscuity." (Packard, 1989:3). Defending the dominant paradigm supplies at least a partial explanation. To have surrendered it would have required a challenge to what Schoepf describes as "the defining power that [in respect of AIDS in Africa] lay in the international biomedical arena." (Schoepf, 2004:15). To fully acknowledge and incorporate socio-economic factors would have required a new or substantially modified paradigm. Such a paradigm would have had to identify enduring poverty and under-development as co-factors. The 'blame' that Africans, as the risk group because of their risk behaviours, carried under the dominant paradigm's explanations, would have had to be directed elsewhere. From the victims it would have shifted not only to the perpetrators (and beneficiaries) of past injustices of colonial dispossession and exploitation (and in South Africa of apartheid), but also to the contemporary policies of structural adjustment programmes and the exploitative aspects of globalisation in the policies of the IMF, World Bank and World Trade Organisation. These were acknowledged by many academics to be responsible for deepening Africa's already abject poverty: Schoepf (2001:353) refers to Millen & Lederer (1998), Kim et al (2000), Schoepf *et al* (2000), Millen *et al*, (2001), and Brunet-Jailly (2001) as examples of this developing critique.

From the mid-1980's it was clear that South Africa was the locus of two independent routes of the spread of the HIV/AIDS epidemic. AIDS in a small minority of largely homosexual men, mostly within the white minority, and believed to have been 'imported' from the USA or Europe, could be wholly explained within the unadjusted dominant paradigm. Gay men were seen as morally lax and socially 'other'. This view acted as a quarantine to protect white society as whole. The state's response was largely to dismiss this homosexual aspect of AIDS; the Director General of Health's 1987 policy view has already been reported above.

*AIDS in Africa*, on the other hand – in the countries of 'black Africa' to the north, amongst migrants workers from those countries, and now beginning to spread in South Africa's majority African population – was a different matter. Surveillance evidence indicated that HIV/AIDS was spreading southwards from central through east Africa to countries from which South Africa recruited a substantial proportion of its mine labour requirements. Government and industry's main concern was maintaining a healthy, productive workforce, and their responses were as they had been in earlier instances of disease epidemics affecting the labour force: to expel workers found with the infection. (Jochelson, 2001:174).

South Africa's Chamber of Mines initiated a HIV screening programme in 1986<sup>22</sup>. Its results provided data on the link between infection in South Africa and the rest of Africa. Almost 30 000 specimens were tested. "In the general mineworker population HIV positivity was highest amongst those from Malawi (3.76 per cent) and Botswana (0.34 per cent), but relatively low among those from Lesotho and Mozambique (0.09 per cent), Swaziland (0.05 per cent) and South Africa (0.02 per cent), reflecting the southward movement of the disease. The overall prevalence was 0.45 per cent." (Jochelson, 2001:171. Figures from Brink, 1987).

The apartheid regime's response was predictably authoritarian. In 1987 it introduced regulations for the compulsory testing of foreign labour recruits and the repatriation of all foreign workers. Recruitment from Malawi, where HIV prevalence rates were higher than in South Africa, came to a halt. The mining industry intended to routinely test all African mineworkers and repatriate HIV-positive workers and those with AIDS who were no longer fit to work. However recognition of the shortsightedness of this policy, which effectively forced people with HIV underground and undermined educational programmes, led to a change of approach. Instead focus was placed on investment in education and improved STD treatment for mineworkers.

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<sup>22</sup> It was one of the earliest screening programmes using the new antibody tests and HIV had only a few months earlier been adopted as the name for the retrovirus, the presence or absence of which the tests established.

The apartheid government in its last few years belatedly softened its moralistic approach, but only from 1993 were condom advertisements permitted on television and condoms made freely available at public health clinics. This progressive development and the closing of the gap between differential official responses for the white and black populations coincided with South Africa's political transition from apartheid rule to non-racial democracy and the interim transitional government in which the African National Congress (ANC) played a determining role. The ANC brought with it approaches to the HIV/AIDS epidemic informed by the thinking of the World Health Organization (WHO), and its own deliberations at the Health Conference held in Maputo, Mozambique in 1990.

In 1994 the democratic government adopted the NACOSA National AIDS Plan (NACOSA, 1994) as the national strategic response to the epidemic. Whilst the unitary plan for all South Africans was to be welcomed, this alignment of South Africa with the mainstream international response to the epidemic brought with it intact the dominant AIDS paradigm. Craddock notes that "most national AIDS prevention programmes are designed according to these biomedical models of individual risk and rational behaviour." (Craddock, 2004:4) and its preoccupation with risk groups and risk behaviour. The limitations of this approach soon became apparent. The late Dr. Jonathan Mann, architect of the WHO's Special program on AIDS, self-critically acknowledged that "the focus on individual risk reduction was simply too narrow, for it was unable to deal concretely with the lived social realities." (Schoepf, 2004:18).

### Studies of HIV/AIDS in Africa

Schoepf points out that while “full responsibility for moralizing discourses and resulting social demobilization cannot be laid solely at the feet of biomedical policy makers, (because) the discourses and policy are embedded in the public culture of late 20<sup>th</sup>-century Western societies and exported to Africa . . . the officially situated epidemiologists’ focus on individual sexual behaviour, their claim to exclusive, value-neutral objectivity, and reliance on social surveys as the sole method of ‘science’ are very much their responsibility.” (Schoepf, 2004:18). *The Annual Review of Anthropology 2001* carries two useful examinations of the development of anthropological and social scientific research in response to AIDS. In the first of these, Parker shows how during the first decade of the epidemic this research focused on the behavioural correlates of HIV infection among individuals and failed to examine the broader social and cultural factors. From the late 1980’s studies increasingly raised the importance of cultural systems in shaping sexual practices relevant to HIV transmission and prevention. Alongside this, studies in the 1990’s increasingly focused on structural factors shaping vulnerability to HIV infection. “Work on social inequality and the political economy of HIV and AIDS has been especially important. Much current work seeks to integrate both cultural and structural concerns in providing an alternative to more individualistic behavioural research paradigms.” (Parker, 2001:163). The second, by Brooke Schoepf, shows researchers’ increasing attention to the linkages between socio-cultural processes that create risk of infection, the lifeworlds of sufferers and the global political economy. “Global inequalities of class, gender and ethnicity are revealed, as poverty, powerlessness, and stigma propel the spread of HIV.” (Schoepf, 2001:335).

This ongoing maturing research into AIDS in Africa is making the overall beneficial contribution to understandings of the epidemic. It also permits the location of the South African epidemic with its continental neighbours in the rich tapestry that is Africa with its many peoples and cultures and history of colonialism. However this development is still rooted in and restrained by the dominant paradigm, restricting the translation of improved understandings into practical interventions.<sup>23</sup> The dominant paradigm provides only a uni-causal and homogenizing explanation rooted in sexual behaviour that has clearly been unable to explain the epidemic across the variety that is southern Africa. It remains powerful, however, and to remain so, is being adapted to accommodate diversity of experience and link this to structural conditions, like the migrant labour system (multiple partners) and poverty (transactional sex). Not tackled head on, except by critical writers outside the mainstream of thought (notably Head, Phillips and Jochelson), are the understandings that are central to epidemiological studies of earlier epidemics of infectious disease. Essentially these are the interactions of poverty and particularly malnutrition, infection and prior immunity, to which could be added the poor nutrition-compromised defensive role of skin and mucosal membranes, from the material on Page 18 of this study.

The argument here is that because the epidemic in Africa has been viewed through the limiting lens of the dominant paradigm, the constructions of the epidemic in Africa have been engineered, and to too great an extent continue to be engineered, to fit into and preserve that dominant paradigm. This dual process has progressively generated a crisis of legitimacy that only a new paradigm that more adequately explains the epidemic in Africa can resolve. It is overdue that the stark social and economic differences that mark the lives of the majority in most of the populations of Africa from the majority in the developed countries are confronted in explanations of and responses to HIV/AIDS.

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<sup>23</sup> In the practical field of HIV/AIDS education, particularly in programmes on a large scale dependent on substantial foreign funding, the trend is in the opposite direction, influenced by measures US President Bush's government is using to encourage a higher profile for abstinence and faithfulness advocacy within prevention campaigns by governments and non-governmental organisations.

## CHAPTER 4.

### BRINGING BACK SOCIAL INEQUALITY IN THE UNDERSTANDING OF THE HIV/AIDS EPIDEMIC : A COMPARISON OF THE EPIDEMICS IN THE USA AND SOUTH AFRICA

At the beginning of this thesis it was argued that epidemiological theory understands the infectious agent as necessary but not sufficient cause of disease. Most epidemiologists adopt a multi-causal explanation of epidemics, in which social context is an important factor in the spread of infection or disease. By and large there is a clear social class gradient to infection and the development of disease. Epidemics of infectious disease typically develop in periods of great social stress and/or deepening poverty. Mausner and Kramer's explanation of the potato famine in Ireland is a very good example of this approach (Mausner & Kramer, 1985:34-36). The multiple and cumulative factors of that devastating famine and disease epidemic, identified by Mausner and Kramer, have been summarised on Page 14. Head (n.d.) refers to the relationship between intensified incidence of TB disease and war, and its rapid decline when peace returned; and Phillips (2003) points to the role of troops returning from war in the spread of the Spanish 'flu of 1918.

These sophisticated understandings have not been incorporated into the dominant explanations of the HIV/AIDS epidemic. As I have argued, the dominant paradigm focuses exclusively on one factor, sexual behaviour, to explain the epidemic. This served to 'explain' the first 'gay' epidemic in the USA and was adapted, drawing on racial stereotypes of Africa, to explain the different heterosexual epidemic in central, east and southern Africa. There have been challenges to these notions. It is to these that I now turn.

**USA : Assessment of the Epidemiological Situation for HIV/AIDS**

The USA had a population in 2002 estimated at just over 291 million people with a per capita income of \$ 35 182 and a dependency ratio<sup>25</sup> of 51. (WHO, 2004b). At the end of 2003, an estimated 950 000 (470 000 – 1 600 000)<sup>26</sup> people (adults and children) were living with HIV infection, including those who may have developed symptoms of AIDS. In the age range of people in their most sexually active years, 15 to 49 years old, the estimate is 940 000 (460 000 – 1 500 000), of whom 240 000 (120 000 – 390 000) are women, 25.5%. These estimates represent 0.6% (0.3% – 1.1%) of the 15-49 year old total population. Separate figures for children (under age 15) are not given, nor are figures for AIDS orphans. The estimated number of adults and children who died of AIDS during 2003 is given as 14 000 (6 900 – 23 000). (WHO, 2004a).

In the assessment of the epidemiological situation in the USA in 2004 following these figures, the cumulative total number of diagnosed AIDS cases in the USA to end 2002 is estimated at 886,575, of whom 877 275 were in the age group 15 – 49. 718 002 of these cases (almost 82%) were in males and 159 271 (slightly over 18%) in females, “with women accounting for an increasing proportion of people living with HIV/AIDS (PLWHAs).” In the same period 9 300 AIDS cases were estimated in children under the age of thirteen. Three percent of AIDS diagnoses in 2002 were amongst adolescents and young adults (13 – 24 years old), with the impact of HIV among this age group suggesting steady HIV transmission among them. The estimated cumulative total of AIDS deaths is 501, 669, of whom 5 315 were of children under the age of fifteen. The assessment also gives the estimated number of diagnoses of AIDS amongst adults and adolescents by exposure category as follows –

Male-to-male sexual contact	420 790
Injection Drug Use (IDU)	240 268
Heterosexual contact	135 628
Male-to-male sexual contact and IDU	59 719
Others <sup>27</sup>	20 869

<sup>25</sup> The number of people outside the age range defined as economically active, per hundred in the total population.  
<sup>26</sup> Figures in brackets are the published range accompanying the preceding estimate.



It notes that racial/ethnic disparities among people with HIV and AIDS continues to increase: in 2002, 58% were non-Hispanic black or Hispanic, and 41% white, non-Hispanic. Regional trends show that in all regions of the USA, most AIDS cases, cumulative and recent, have been diagnosed among persons from larger metropolitan areas. The three leading States, reporting the highest number of cumulative AIDS cases among residents to end December, 2002 are New York (155 755), California (128 064) and Florida (90 233). In each region, seroprevalence rates (HIV+ cases per 100 000 population) were highest in the large metropolitan areas, intermediate in the smaller metropolitan areas, and lowest in rural areas; large and smaller metropolitan rates were highest in the Northeast and rural rates highest in the South. (WHO, 2004a).

#### **USA : Assessment of the Health Situation**

Of the total population of the USA of just over 291 million in 2002, 16% were over 60 years of age. The fertility rate was 2%. Life expectancy at birth was 74.6 for males and 79.8 for females, and healthy life expectancy at birth slightly less at 67.2 for males and 71.3 for females. The probability of dying (per 1000 population, and for the year 2002) under age 5 years was 9 for males and 7 for females and between ages 15 and 59 years 140 for males and 83 for females. Immunization rates were well in excess of 90%. (World Health Report 2004 : WHO, 2004b).

In 2001 total expenditure on health almost 14% of GDP. Government expenditure on health contributed 44% of this (almost 18% of total government expenditure). Of private expenditure on health, 26.5% was out-of-pocket and 64.1% private pre-paid health plans. Per capita total expenditure on health was \$4887 and per capita government expenditure on health was \$2168.<sup>28</sup>

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<sup>27</sup> 'Others' includes haemophiliacs, blood transfusion, perinatal and risk not reported or identified.

<sup>28</sup> These rates are at international dollar exchange rate allowing direct comparison with the South African figures.

In the USA 1.4% of children under 5 were underweight for their age in the period 1988-1994. In 2001 the infant mortality rate was 7:1000 live births and the under 5 mortality rate 9:1000 live births; maternal mortality rate was 14 per 100 000 live births, Ninety nine percent of births were attended by skilled health personnel. In 2001, TB prevalence was 4 cases per 100 000 population and the TB surveillance and treatment programme was very effective. The population nationally using solid fuels was less than 5%, and in both rural and urban areas 100% of the population had sustainable access to an improved water source and access to improved sanitation. (WHO, 2004b).

#### **USA : Associations between HIV/AIDS and Ethnicity, Health & Relative Poverty**

The indicators above are generally aggregates for the whole population. They do not illustrate variations by region, housing and working conditions, nor by socio-economic class. Instead, as shown above, the statistics are reported by racial/ethnic category. Non-Hispanic blacks and Hispanic/Latinos comprised 25.9% of the total population of the USA in 2001. Yet together these sub-sets of the population carry more than 55% of the HIV/AIDS case burden. However, poverty figures from the same source indicate that in 2001 22.7% of black families and 21.4% of Hispanic/Latino families lived below the US Government's defined poverty line. This compares with only 9.9% of white families.

Access to medical care may also be a contributing factor the apparent racial/ethnic disparity in HIV/AIDS cases. In 2001, and again using figures for 2001 from the USA Government, 57.4% of blacks and 47.6% of Hispanics/Latinos under 65 years of age had private health insurance compared to 75.2% of whites and 71.5% of the total population under 65. The percentages reverse for those without medical aid. 20.4% of blacks and 16% of Hispanics compared with only 8.1% of whites and 10% of the total population do not have medical aid.

Levels and types of medical care provision in the USA also have strong associations with relative poverty, with a steep decline in access to private medical insurance as poverty increases. Of those with incomes below the official poverty line, only 25.6% have private medical insurance and 39% are dependent on Medicaid; of those in the bracket 100-149% of poverty line the respective figures are 39.6% and 23.5%, with the gap further increasing to 57% and 13.5% for those 150-199% above the poverty line and 87.1% and 2.6% for those at 200% of the poverty line and above. Persons in the South<sup>29</sup> and in Non-Metropolitan Statistical Areas (i.e. rural) are less likely to have private medical insurance and more of them rely on Medicaid. (*Data from USA Government, 2004*).

What these figures suggest is that HIV/AIDS is concentrated amongst the poorest sections of US society. If the statistics were presented in socio-economic status terms (taking into account for example income, education level attained, occupation), instead of spurious<sup>30</sup> racial categories, this difference would probably become clearer. There are likely to be significant differences in the health status of a well-off, healthy-living person, in a 'white-collar' profession, with adequate opportunities and resources to live a full life, and adequate private medical insurance; and a single mother from a deprived background, caring for a large number of off-spring with only irregular and poorly-paid employment opportunities, living in a rented mobile home in a remote and relatively undeveloped rural area, with no medical insurance. The health status of a 'blue-collar' worker with regular adequately waged work involving hard toil and exposure to industrial hazards, with little exercise, few holidays and a poor diet, and limited medical insurance, is likely to be different again.

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<sup>29</sup> The other regions are North East, Mid-West and West and include most major cities. Parts of the South are notoriously relatively impoverished.

<sup>30</sup> For a critique of US racial categories and the biological/cultural essentialism that underlies them, see Head (1997).

## USA : Other Sexually Transmitted Infections and HIV/AIDS

Existing infection with Sexually Transmitted Infections (STI's) other than HIV<sup>31</sup> is a generally accepted risk factor for infection with HIV.<sup>32</sup> STI's "are among the most common infectious diseases in the United States today [and] they infect more than 13 million men and women in [that] country each year." (NIH, 2004). This represents 4.3% of the total population or 8.7% of the population in the major sexually active years 15-49.

"They affect men and women of all backgrounds and economic levels . . . are most prevalent among teenagers and young adults. Nearly two thirds occur in people younger than 25 years of age." (NIH, 2004). Many STI's are asymptomatic but a person who is infected can pass the infection on to a sex partner. Asymptomatic infection is more frequent in women than in men, with the result that they suffer more frequent and more severe STI-related health problems than men, in part because they are less likely to seek care and treatment until serious problems have developed. Chlamydial Infection (4 to 8 million new cases per year), Genital Herpes which is incurable and recurrent (60 million Americans affected); Genital Warts; Gonorrhea (400 000 reported cases a year); and syphilis (11 000 cases reported in 1996) are the most common of more than 20 identified STI's in the USA. One STI, the human papillomavirus, causes genital warts and is associated with cervical and other genital cancers. Some STI's including HIV can be vertically transmitted to newborns and/or contribute to other infections, some severe and with enduring ill-effects and even, untreated, fatal to the infant. (NIH, 2004).

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<sup>31</sup> The human immunodeficiency virus (HIV) is also but not exclusively a sexually transmitted infection. In this text 'other STI' means all STI's other than HIV.

<sup>32</sup> Apart from the obvious associations of HIV and other STI's affecting people who are sexually active and of the direct horizontal mode of transmission most common to HIV being also that for other STI's, the explanation lies in the detail of infection transmission. Lesions and other disorders in the genital area common in other STI's provide a port of entry and escape for the HI Virus in the course of intimate sexual contact. Abnormal discharges due to certain STI infections may outwardly transmit HIV; and the general undermining of the protective role of skin and mucuous membranes in the internal and external areas of the genital organs, anusses and mouths of persons infected with other STI's makes them more susceptible to infection.

STI's also affect homosexual men. Untreated they can become severe diseases and significant reservoirs of infection. They also provide the same opportunities for HIV transmission as noted for heterosexual men and women. Their prevalence in the populations of homosexual men that presented the first AIDS cases has already been discussed in Chapter Two.

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### South Africa : Assessment of the Epidemiological Situation for HIV/AIDS

South Africa has a population in 2004 (mid-year) estimated at approximately 44.6 million people. (StatsSA, 2004). Per Capita income was \$ 7 538 in 2002 and the dependency ratio<sup>33</sup> 59. At the end of 2003, an estimated 5.3 million (4.5m – 6.2m) people (adults and children) were living with HIV infection, including those who may have developed symptoms of AIDS. In the age range of people in their most sexually active years, 15 to 49 years old, the estimate is 5.1m (4.3m – 5.9m), of whom 2.9 million (2.5m – 3.3m) are women, 56.9% These estimates represent 21.5% (18.5% – 24.9%) of the 15-49 year old total population. Children under age 15 living with HIV infection are estimated to number 230 000 (150 000 – 340 000), and the number of AIDS orphans is estimated at 1.1m (0.71m – 1.5m). The estimated number of adults and children who died of AIDS during 2003 was 370 000 (270 000 – 520 000). (WHO, 2004a).

The assessment that follows these figures for South Africa does not, as that for USA, give AIDS diagnosis and mortality data. HIV infection data from the national sentinel surveillance surveys of antenatal clinic (ANC) attendees conducted since 1990 shows a consistent and dramatic increase among pregnant women tested up to 2002. In the provinces with the major urban areas are located (given as Gauteng, Western Cape, Kwazulu-Natal and Eastern Cape<sup>34</sup>) HIV prevalence amongst ANC attendees increased from less than 1% in 1990 to a median of 28% in 2002. In the predominantly rural Free State, Northern Cape, Mpumalanga, Northern and North-West Provinces the increase in the same period was from less than 1% to 26%. Age data is available for the years 1991 through 2002. HIV prevalence among ANC attendees (women) less than 20 years of age increased from 2 percent in 1991 to 21 percent in 1998 and has since declined to 15 percent. Since 1998, HIV prevalence among ANC attendees (women) 20-24 years of age has remained around 24 percent.

<sup>33</sup> The average masks wide variations from 78.7 in the Limpopo and Eastern Cape Provinces with large rural populations and high numbers of outward migrant workers, to 36.9 in the urbanised Gauteng Province. The difference between Africans at 60.2 and 'whites' at 42.0 is also stark (2003 figures). (SAHR, 2004).

<sup>34</sup> The last mentioned two provinces have large rural populations as well as metropolitan and industrialised centres with major ports.

Among STD clinic patients for locations where and years/periods when information is available, the transmission rates are as follows –

Johannesburg	:	1988	:	Male : 1.5%	Female : 1.0%
		1994	:	Male : 19%	Female : 25%
Durban	:	1995 – 1998	:	40% to 54% (Total male and female)	
		2000	:	Male : 64%	Female : 50%
Cape Town	:	1998	:	Male : 10%	

The assessment concludes with figures from one-off surveys<sup>35</sup> of ‘risk groups’, as follows –

HIV Prevalence among sex-workers tested in KwaZulu-Natal increased from 50 percent in 1996-1997 to 61 percent in 1998; nationally 50 percent of sex workers tested were HIV-positive. In the late 1990’s, HIV prevalence among sex workers in the mining areas of Carletonville and Khutsong (North West Province, on the West Rand west of Johannesburg) had reached 70 percent; of truck drivers surveyed in 1999 in six sites outside major urban centres, 56 percent were HIV-positive; and of men who have sex with men (MSM) surveyed in Durban and (elsewhere) in KwaZulu-Natal in 1986, the median HIV prevalence was 8%, and in a survey of MSM Cape Town, also in 1986, the prevalence was 11%. (WHO, 2004a).

Also a localized study but, if in any way representative of a generalized trend, a cause for concern is the following indication of young women’s exposure to HIV infection in Durban. The MRC announced at the World AIDS Congress in Bangkok this year that in three trial sites in and around Durban that “young women between the ages of 18 and 30 are becoming infected at a higher rate than the most at risks groups in the world, including sex worker cohorts. Of about 1200 HIV-negative volunteers followed up, seven out of very 100 women became infected during one year.” (Ramjee, 2004).

The most recent published estimates of HIV prevalence in South Africa’s adult population are those given in the mid-year population estimates from Statistics SA: approximately 3.83 million cases, a rate of 15.2%. Accumulated AIDS deaths up to 2004 were estimated to be 1.49 million. (StatsSA, 2004).

<sup>35</sup> Many studies lack rigour. As has been discussed in the previous chapter, ideas about ‘African’ sexual behaviour are so ingrained that they do not require questioning in the minds of statisticians working on the epidemic.

### South Africa : Assessment of the Health Situation

Of the total population of nearly 45 million in 2002, 6% were over 60 years of age. The fertility rate was 2.6. Life expectancy at birth was 49 years for males and 53 years for females. Healthy life expectancy at birth was significantly less at 43 years for males and 45 years for females. The probability of dying (per 1000 population; and for the year 2002) under age 5 years was 86 for males and 81 for females and between ages 15 and 59 years 598 for males and 482 for females. In 2001 total expenditure on health was 8.6% of GDP. General government expenditure on health contributed 41% of this. This was 10.9% of total government expenditure. Of private expenditure on health, 22.1% was out-of-pocket and 72.2% private pre-paid health plans. Total health expenditure was \$652 per capita and government expenditure on health was \$270 per capita.<sup>36</sup> (WHO, 2004b). In South Africa 9% of children under 5 were underweight for their age between 1988-1994. In 2001 the infant mortality rate was 49 and the under 5 mortality rate 71, both per thousand live births; maternal mortality ratio was 230 per 100 000 live births and 84.4% of births were attended by skilled health personnel. In 2001, 72% of one-year-olds were immunized against measles. The tuberculosis (TB) mortality rate is 46 per 100 000 and TB prevalence 483 cases per 100 000 population. The cure rate falls short of that needed to eliminate the pool of infection in the population and thus halt the TB epidemic. The population nationally using solid fuels was 28%, and 73 % of the rural and 99% of the urban population had sustainable access to an improved water source and 80% of the rural and 93% of the urban population had access to improved sanitation. (WHO, 2004b).

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<sup>36</sup> These rates are at international dollar exchange rate allowing direct comparison USA figures.



VARIOUS INDICATORS : POPULATION, HIV/AIDS, HEALTH STATUS				
INDICATOR	YEAR	USA	SOUTH AFRICA	
Population, 1000's	2002	297 043	45 214	
Dependency Ratio	2002	51	59	
Per Capita Income	2002	\$35 182	\$ 7 538	
<b>PLWHA</b>	<b>at end 2003</b>			
Total		950 000	5 300 000	
Age 15-49, All		940 000	5 100 000	
Age 15-49, Women		240 000	2 900 000	
%age Women		25.5	56.9	
Children, under age 15		[5]	230 000	
<b>PREVALENCE, ALL 15-49</b>	<b>2003</b>	0.6	21.5	
<b>Died of AIDS</b>	<b>in 2003</b>	14 000	[5]	
<b>Diagnosed with AIDS</b>	<b>to end 2002</b>			
Cumulative Total		886 575	[5]	
Age 15-49, All		877 275	[5]	
Age 15-49, Men		718 002	[5]	
%age Men		82%	[5]	
Children		9 300	[5]	
<b>AIDS Deaths</b>		<b>to end 2002</b>	<b>to end 2004</b>	
Cumulative Total		501 699	1 490 000	
Under Age 15		5 315	[5]	
<b>AIDS Orphans</b>	<b>at end 2003</b>	[5]	1 100 000	
<b>HEALTH INDICATORS</b>				
Population over 60, percentage	2002	16.2	6.1	
Fertility Rate	2002	2.1	2.6	
Life Expectancy at birth, Male	2002	74.6	48.8	
Life Expectancy at birth, Female	2002	79.8	52.6	
Probability of dying under age 5 [1]	2002	m 9 f 7	m 68 f 81	
Probability of dying age 15-59 [1]	2002	m 140 f 83	m 598 f 492	
Total Health Expenditure, % of GDP	2001	13.9	8.6	
Government %age of above	2001	44.4	41.4	
Private Expenditure: Out of Pocket %	2001	26.5	22.1	
Private Expenditure: Health Plans %	2001	61.4	72.2	
Total Health Expenditure per capita	2001	\$ 4 887	\$ 652	
Gov't Health Expenditure per capita	2001	\$ 2 168	\$ 270	
<b>UN MILLENIUM DEVELOPMENT</b>				
Underweight children under age 5	1998-1994	1.4%	9.2%	
Infant Mortality Ratio [2]	2001	7	49	
Under-5 Mortality Ratio [2]	2001	9	71	
Maternal Moratlity Ratio [3]	2001	14	230	
% Births attended by skilled personnel	2001	99.0	84.4	
Immunisation rates	2001	> 90	72	
TB Prevalence per 100 000 pop'n	2001	4	483	
TB Mortality per 100 000 pop'n	2001	0	46	
%age Pop'n using solid fuel	2001	< 5%	28%	
%age Pop'n w access to clean water [4]	2001	100% : 100%	73% : 99%	
%age Pop'n w improved sanitation [4]	2001	100% : 100%	80% : 93%	
NOTES -				
[1] per 1000 of the population [2] per 1 000 live births [3] per 100 000 live births [4] urban : rural [5] comparable data not available				

Table 1:  
Comparison of Various Indicators : HIV/AIDS Epidemic and Health Status, USA and South Africa  
SOURCES - WHO, 2004a; WHO, 2004b; StatSA, 2004

Immunisation coverage in the USA exceeds 94%. In South Africa coverage for children in their first year is only 67.5%, and although measles immunisation first dose coverage is 82% the drop out rate is 16% before the second dose. (SAHR, 2004). Anaemia prevalence and iodine deficiency rates among children are high.

These indicators are of course aggregates for the whole population. They do not illustrate variations by either racial category or socio-economic class. The extremes that may occur as between, for instance, a well-off, healthy-living person, in a 'white-collar' profession, with adequate opportunities and resources to live a full life, and adequate private medical insurance; and an eldest daughter caring for sibling AIDS orphans with no income in a rural village in an undeveloped area, and no access to public health care; and a migrant mineworker with wage work involving hard toil and exposure to industrial hazards, living in a hostel without family and dependent on his employers for almost all services.

#### **South Africa : Associations between HIV/AIDS and 'Race', Health & Relative Poverty**

Unlike the UNAIDS/WHO Epidemiological Fact Sheet for the USA that includes the reference to differential trends in racial/ethnic groups, the UNAIDS/WHO Epidemiological Fact Sheet for South Africa includes no reference to 'race' and there is no data on socio-economic categories. Doherty & Colvin (2004:198) make the point that "national and provincial estimates on the prevalence of HIV are useful in tracking the course of the epidemic, they do not provide a picture of the differences in prevalence by various demographic and socio-economic factors." There is no such data at national level for South Africa and the country lacks a standard socio-economic framework for the collection and presentation of this data.<sup>37</sup>

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<sup>37</sup> For the argument for such a framework see Head (1997), and for a proposal for such a framework see Seekings (2003).

Such data as there is comes from special studies conducted in communities or specific sub-populations. Doherty & Colvin rely on the Nelson Mandela Trust / Human Sciences Research Council (NM/HSRC) household survey of 2002 which has “for the first time, provided insight into how HIV is distributed among sub-populations at the national level.” (Doherty & Colvin, 2004:198). Key findings from this survey and other sources are summarized here –

- On race and class, the NM/HSRC Study showed that among Africans the chance of being infected with HIV was similar across socio-economic strata as measured by self-reported income level. Studies in businesses have shown a slightly different picture in that the prevalence of HIV tends to decrease in the management and higher job bands regardless of ‘race’.
- On race, the NM/HSRC study found that 6.2% of the White population is HIV infected; the HIV prevalence for Africans from the same survey was 12.9%.
- On locality/residential conditions the NM/HSRC study found no significant difference in HIV prevalence between formal urban areas and rural areas but did find a significantly higher HIV prevalence among people living in urban informal areas, indicating a link between deprived socio economic circumstances and HIV.
- On gender, HIV prevalence in 2002 given in the NM/HSRC study is 15.0% for women age 15 and above and for men age 15 and above it is 11.5%. For women prevalence rises early and rapidly and peaks in the 20 – 30 year age group where as for men it rises more slowly and peaks in a slightly older age group.
- HIV Prevalence in Youth has been high but age specific analysis of the antenatal clinic data indicates a welcome but statistically not significant<sup>38</sup> decline of HIV infection rates among 15-19 year old ANC attendees from 21% in 1998 to 16.5% in 1999 and 14.5% in 2002. The NM/HSRC study found the rate for 15-24 year olds nationally in 2002 to be 9.3%, which when stratified by gender gave rate for women of 12%, similar to that of ANC surveillance data, and double that for male youth at 6%.  
(Doherty & Colvin, 2004:198-199).
- In the City of Cape Town, which includes formal urban and informal peri-urban residential areas, 23 185 premature deaths (an estimated at 90% of the total premature deaths) were recorded in 2003. HIV/AIDS was the recorded cause in 12.2% of these (2 828).  
(Chapple, 2004).

<sup>38</sup> The recorded reduction is less than the margin of error in the statistics. The trend will have to be demonstrated over a number of years before it can be confirmed as significant.

This male youth HIV prevalence rate for 2002 is actually slightly less than the HIV prevalence rate for the 'white' population given by the same study. This serves to dispel the myth that HIV/AIDS in South Africa is a 'black disease'. Most 'white' South Africans would be shocked by a statement that the rate of HIV infection among them was the same as that amongst all male youth regardless of race; and unbelieving if told 'their' infection rate was the highest measured in any predominantly 'white' community anywhere else in the world. "Such a high percentage indicates a generalised epidemic and cannot be accounted for by being isolated to sub-sections of the [white] community such as homosexuals and injecting drug users." (Doherty & Colvin, 2004:198).

Poor access to medical care is a contributing factor to the ill-health of many people in South Africa. South Africa has no national health insurance system and private medical insurance is mostly confined to those who can afford it: in 2002 only 15.4% of the population had medical aid coverage. In the absence of socio-economic data, 'race' category is here necessarily used as a proxy for affordability: in 1999, 67.8% of whites but only 28.9% of Indians/Asians, 21.3% of Coloureds and 8.4% of Africans had medical aid coverage. The per capita expenditure ratio between private and public sectors in 2002 was 7.08:1. (SAHR, 2004).

Apart from affordability, the mal-distribution of health care provision limits access. This occurs between the public and private sectors, with the private sector consuming 58% of expenditure and capturing a higher proportion of all types of personnel (except nurses) than the public sector, this despite the fact that the private sector caters for less than 20% of the population. Further mal-distribution exists between urban and rural areas, between formal urban and informal peri-urban areas and between the tertiary and primary levels of care. (Padarath *et al*, 2004).

Considerable attention is being paid by Government to address the inequities which have their roots in the apartheid and colonial systems, but the progress of reform has been slow because budgetary constraints, the backlog of infrastructure shortfall in rural and peri-urban areas, shortage of personnel and skills, the very real obstacles to directing resources to areas of greatest need, and the powerful private and profit interests that mount resistance to change and have to be confronted.<sup>39</sup>

### **South Africa : Other Sexually Transmitted Infections and TB, and HIV/AIDS**

As we have already seen infection with other STI's is also strongly associated with risk of becoming infected with HIV. Other STI's act as co-factors in the sexual transmission of HIV. They represent a major disease burden for South Africa with around 1.9 million new cases of symptomatic STI's treated nationwide per year. (Funani *et al*, 2004). Since 2000 the prevention, management and control of STI's has been a priority area of the National HIV/AIDS/STD Strategic Plan 2000-2005. (DoH, 2000). Prevention through education campaigns and of mother to child transmissions of STI's including HIV; the surveillance, detection and early treatment of other STI's; and combined detection of HIV and other ST infections – all are now standard practice generally if not yet universally available in the public sector health facilities. Only 50% of professional nurses are trained in syndromic management and only 41% of providers have correct knowledge of drug treatment for STI's. Over 50% of general practitioners and over 75% of specialists work in the private sector and South Africa lost 250 000 skilled health personnel through emigration between 1989 and 1997. (Data selected from SAHR, 2004). In August 2004 the long-awaited new Health Act to replace the 1977 Act of the apartheid regime was finally tabled in Parliament. It is too early to say what impact it will have on the quality, provision and access to services.

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<sup>39</sup> Indicative of this slow progress and the factors limiting change are the following: per capita public sector expenditure (2003 prices) on health has recovered to only R 969 in 2003/04 after dipping from R948 in 1998/99 to R901, R897, R929 and R 931 in the intervening years, while the ratios of private to public expenditure has climbed consistently from 5.26:1 to 7.08:1 in the same period. (Data selected from SAHR, 2004).

Many STI's, including HIV, can be asymptomatic yet still transmittable. Early detection and treatment of treatable STI's is a major public health objective that can make a contribution to controlling the spread of HIV as well as the treated STI. Use of barrier methods of control (condoms, male and female, and appropriate spermicides and microbicides) to interrupt and prevent the transmission of the infectious agent also serve to control these epidemics and public education and health promotion campaigns aim to extend the practice.

TB also has a significant association with HIV/AIDS in South Africa. A recent WHO report of an analysis shows that nine percent of an estimated 8.3 million new cases of TB globally in the year 2000 are directly attributable to AIDS. This rises to a startling 31 per cent in sub-Saharan Africa, with the caseload rising by six percent per year. In South Africa almost 59 percent of TB cases and 50 percent of TB deaths are attributed to HIV/AIDS. (AfroAIDS, 2003).

Globally only six countries have more cases of TB than South Africa, with 224 420 cases registered in 2002 and incidence rate of 497 cases per 100 000 population (cf. USA: 4 per 100 000). The HIV epidemic fuels the TB epidemic and *vice versa*, with the immune suppressions of both infections increasing susceptibility to infection. Also, "HIV infection in a person with TB infection increases the risk of developing TB disease from 10% in a lifetime to 7 – 8% per year." (Bamford *et al*, 2004:222).

### **South Africa : Communicable Diseases and Nutrition, and HIV/AIDS.**

Sanders records that the diseases that account for 50 – 90% of illness and death among the poor in the developing countries fall into two groups – *nutritional deficiencies* and *communicable diseases*. He makes the important point that “these sometimes act separately but more often they act together and aggravate each other.” (Sanders, 1985:15). Doyal (1979:97) makes the same general point. Unlike the USA where most of the notorious infectious diseases (TB, measles, diphtheria, whooping cough), with the exception of STI's, are now rare, and nutrition as a health problem is largely one of *nutritional imbalance* contributing to non-communicable disease<sup>40</sup>, in South Africa certain infectious diseases together with *nutritional deficiencies* – the so-called ‘diseases of poverty’ – are, with STI's, significant to the epidemic.

Keusch points to “a close concordance between nutritional status and immunity” and describes “the cyclical relationship between poor nutrition, increased susceptibility to infectious diseases, leading to immunological dysfunction and metabolic responses that further alter nutritional status.” (Keusch, 2003:336S). In their review of the literature on HIV/AIDS and nutrition, Piwoz and Preble point to the “inextricable relationship” between HIV/AIDS and malnutrition –

“Research suggest that malnutrition increases the risk of HIV transmission from mothers to babies and the progression of infection. In turn, HIV infection exacerbates malnutrition through its attacks on the immune system and its impact on nutrient intake, absorption, and utilization. Malnutrition also increases fatigue, and it decreases physical activity and work productivity of people living with HIV and AIDS.” (Piwoz & Prebble, 2000:ix).

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<sup>40</sup> Excessive consumption of certain foodstuffs, notably those promoted by a ‘fast-food’ culture but also many additives used in agri-business and the processed food industry, have been associated with obesity, high cholesterol levels and other conditions leading to heart disease and other chronic diseases among the middle aged.

Nutritional deficiencies and infectious diseases remain at high levels in South Africa. Apart from AIDS which accounted for 39.0% of the premature deaths in South Africa in 2000, the following diseases associated with poverty were in the top twenty specific causes of premature death. TB accounted for 5.0%, diarrhoeal diseases 3.8%, lower respiratory infections 3.8%, low birth weight 3.3%, protein energy malnutrition 1.4%, and neonatal infections, asthma and bacterial meningitis all 0.8% each.<sup>41</sup> (Bradshaw & Nannan, 2004).

The top causes of death in children under 5 years of age give a similar picture of poverty-related causes – HIV/AIDS is the cause of 40.3% of these deaths, low birth weight 11.2%, diarrhoeal disease 10.2%, lower respiratory tract infections 5.8%, protein energy malnutrition 4.3%, neonatal infections 2.8%, bacterial meningitis 1.1% and congenital syphilis 0.2%. (Data from Initial Burden of Disease Estimates for South Africa, drawn from tables in Bradshaw & Nannan, 2004).<sup>42</sup>

Highly indicative of poor health and inadequate nutrition, both in mothers and their offspring, are the maternal mortality ratio (MMR) and the infant mortality rate (IMR).<sup>43</sup> In South Africa the MMR in 1998 was 150 and the IMR in 2002 was 59. The IMR rate for Africans at 47.0 and 11.4 for 'whites', indicative, with race as a proxy, of a relationship with socio-economic status. (SAHR, 2004).

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<sup>41</sup> These rates, apart from that for TB, would all be much higher if age-adjusted, because they are the typical causes of under-five mortality.

<sup>42</sup> The MRC has commented that the classic infectious diseases such as diarrhoea, respiratory infections and malnutrition are still important causes of mortality despite HIV/AIDS. "Environmental development initiatives . . . improved personal and domestic hygiene (and) comprehensive primary health care will go a long way to preventing these diseases. Poverty reduction initiatives are also important in this regard." (MRC, 2003).

<sup>43</sup> MMR is defined as the number of women who die as a result of childbearing, during the pregnancy or within 42 days of delivery or termination of pregnancy in a year, per 100 000 live births in that year. IMR is the number of children less than one year old, who die in a year, per 1000 live births in that year. CMR is the number of children age 12 months to 5 years who die in a year, per 1000 live births in that year. The data is the most recent for which the SAHR (2004) gives figures.



In the following years of life, the range of causes of child mortality increases, but infections, more severe when the child is malnourished, are a significant contributor to child deaths. In 1998, the child mortality rate (CMR) was 15.4 per 1000 live births in that year. Surveys involving the measurement of standard indicators in samples of children identify evidence of malnourishment. In a survey in 1999, 21.6% of children between one and nine years old were stunted, i.e. short in height for their age; 10.3% were underweight for their age; and wasting (weight relative to height) was identified in 3.7% of the sample. Diarrhoea incidence in children under five was recorded in 1998 at levels of 133.4 per 100 000. (selected data from SAHR, 2004).

While this national data illustrates the contribution of the diseases of poverty and general ill-health to the burden of disease in South Africa, they shed little light on the inequalities of distribution. For an indication of this, Bradshaw and Nannan refer to mortality data from Cape Town and its Sub-Districts that shows injuries and the diseases of poverty feature prominently as causes of premature mortality in the informal settlements and poorer communities of the Cape Flats and non-communicable diseases account for most cases of premature mortality in the more affluent suburbs. (Bradshaw and Nannan, 2004:55).

Employment levels, income levels, access to and quality of health care provision, quality of housing, domestic overcrowding and access to basic services (clean water, improved sanitation, electricity) will be differentially distributed across the same geographical districts, with the poorest bearing the greatest burden of deprivation and most exposed to factors causing disease and the affluent insulated from these risks to health. Very similar patterns of distribution of ill-health and socio-economic and living conditions exist in urban/peri-urban settings throughout South Africa.

There is an intimate relationship between the HI Virus life-cycle and the immune cells that support its replication in the host, resulting in a dynamic interaction between co-infections and HIV infection. TB, malaria, schistosomiasis and genital ulceration in particular have been identified as having these inter-related effects. (Lawn, 2004). Current and past infections of both TB and malaria, by their suppressant effect on the immune system, intensify and speed the progression of HIV infection to AIDS; immune suppression is believed also to increase the risk of HIV-negative people contracting HIV infection, and HIV-positive persons transmitting it.

Malaria has been eradicated in the USA, where it was once prevalent. The risk in South Africa is confined to parts of Northern KwaZulu-Natal, Mpumalanga and Limpopo Provinces, a risk area less than 20% of what it was 50 years ago. Malarial infection takes its greatest toll on very young children and pregnant women. It is seasonal and climatically influenced, with increases following floods. Management is by interrupting the lifecycle of its vector, a mosquito and preventing it interacting with humans. Early treatment of infection can greatly reduce the fatality rate, which ranging between 0.8 and 0.6 between 1999 and 2002 is higher than the target rate of 5%. (Moonasar *et al*, 2004).

In the USA, with 100% of households having access to improved water and sanitation, cholera is not a risk to health. In South Africa, episodic outbreaks of cholera occur, with recent instances were due to polluted water sources, the association being with underdevelopment and rural location (no improved piped water supply) and poverty (unaffordability of improved water, overcrowding in informal settlements). The number of cases, with the associated fatality rates in brackets were in 2000, 10 166 (0.8%), in 2001, 98 059 (0.2%), in 2002, 16 394 (0.7%) and in 2003, 3 866 (1,1%). (SAHR, 2004). Not recorded in this way, because they are not notifiable diseases, are the tens of thousands of cases of diarrhoeal infections, evidenced by the premature fatality rates caused by these, also associated with lack of improved water supply and sanitation.

### The Demographic Transition

The demographic transition, or the “change from high death rates matched by high birth rates to low death rates with still high birth rates, then finally to low death rates with low birth rates” (Sanders, 1985:73), has been completed over the last 200 years in the developed countries. It was accompanied by overall population growth and resulted from development accompanying the industrial revolution. (Mausner & Kramer, 1985:250). Sanders points out that improved nutrition in nineteenth century England and Wales and later widespread environmental improvement led to a sustained drop in mortality from communicable disease. This was followed by a sustained decline in fertility. The medical contribution to the decline in mortality was less than that of improved living standards and hygiene. The most significant medical measures followed the decline, especially the introduction of antibiotic treatment to fight infections from the late 1940's onwards. “These specific medical measures have been transferred to the under developed world. But the nutritional and environmental improvements . . . have not occurred. It is for this reason that no further great impact on mortality can be made [by the medical contribution].” (Sanders, 1985:77).

Population pyramids<sup>44</sup> reflect the stage of a country's demographic transition. For the USA and developed countries, the sides are closer to vertical, reflecting even distribution of population numbers by age and most deaths in later years; for poor countries, the sides are inward tapered, reflecting high birth rates and high mortality rates at all ages. South Africa is still passing through a transition from (for most of its people) a characteristically poor ‘underdeveloped’ society to a more generally developed one. It carries a quadruple burden of disease at this stage of this process. Its population pyramid reflects with relatively constant proportions of the population in the lower ages up to the mid-thirties and thereafter more or less equal reductions in numbers through to the age 85+, but still a high proportion (40%+) of the total population under 18 years of age, in and entering the age range most at risk for HIV.

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<sup>44</sup> Graphical representations of the population distribution by age vertically and numbers or percentages horizontally, with male and female divided on either side of the vertical axis.

When disaggregated the pyramid of the richest section of the population (whites) is akin to that of a rich industrialised country, and the pyramid of the poorest (African) akin to a very poor country. At this stage of transition there is the growing burden of chronic, non-communicable diseases typical of more developed societies; a high injury burden generated by violence, homicide, and traffic and other accidents, the weight of which is related to the transition; a burden of pre-transitional diseases of poverty and malnutrition; and the HIV/AIDS epidemic, the fourth burden in its own right. All need to be tackled comprehensively with intersectoral strategies. "Not only is a health sector response required, but government, communities and NGO's need to partner to shoulder the burden. The unfinished agenda of poverty related illness remains an issue requiring a comprehensive response, ensuring that development reaches the poor. Children should not be dying from malnutrition in a middle income country." (Bradshaw & Nannan, 2004:55).

### **Summary of Comparison : USA and South Africa**

High levels of STI's have been identified in the USA but the prevalence of HIV is low. If sexual behaviour is the key and STI's indicate risk of HIV infection, then the low rates of HIV are surprising. So what else may explain the differences? Returning to epidemiology and its multi-causal explanations of disease and the long-established history of higher morbidity and mortality levels related to social class and social conditions, true of most infectious diseases, notably TB, that have been discussed here gives some pointers to better explanations. This history can be shown historically in changing population pyramids over time. That of South Africa today is remarkably similar to that of the USA 100 years ago. (Mausner & Kramer, 1985). In rich countries, the vast majority of people no longer suffer semi-starvation and massive deprivation. Most infectious diseases are no longer a significant health problem, having been eradicated with by improvements in living conditions and standards, specifically in nutrition, and latterly vaccinations and antibiotics.<sup>45</sup>

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<sup>45</sup> Only smallpox eradication benefited from medical intervention in the form of vaccination before 1900 and most vaccinations and antibiotics were introduced only after 1940. (Sanders, 1985)

In South Africa the prevalence of many infectious diseases has been dramatically reduced by vaccination and the use of antibiotics, but TB persists as a severe and growing epidemic, cholera outbreaks occur when clean water is not available, and malaria is still a killer in risk areas of the country. But the conditions associated with poverty still kill children and reduce the quality and shorten the lives of adults. TB interacts with HIV/AIDS and both are very prevalent where HIV rates are highest in the country, amongst the poor. Malaria where it is endemic as in northern KwaZulu-Natal interacts similarly with HIV/AIDS.

In the USA the HIV/AIDS epidemic is not generalised as in South Africa. It has not had a substantial impact on the health of the population nor contributed widely to poverty. The disproportionate prevalence of HIV infection amongst African-American and Hispanic/Latin communities suggests an association with relative poverty, which in turn is disproportionately distributed towards those racial/ethnic groups. Their socio-economic status also influences their access to, and quality of, medical care. The USA's disease burden is, as in other countries of the developed world, largely made up of non-communicable diseases and a smaller burden of violence and accidents. Other STI's are probably, in the absence of any significant TB and other infectious diseases, the only significant disease co-factor. Morbidity is for the majority in the USA is associated with the chronic non-communicable diseases and natural aging, not infectious disease and under-nutrition (semi-starvation). Only for the very poorest and most disadvantaged, is HIV/AIDS likely to be found in the same association with socio-economic and physical environmental conditions as it is in countries of the underdeveloped world. Poverty is affecting more people in the USA, with people living below the USA poverty line increasing in each of the last three years (AFP, 2004).

Instead of continuing to view the HIV/AIDS epidemic in the USA as largely confined to risk groups within which it is transmitted by risk behaviours, it could be considered as comprising two trends. One affects largely gay men and is predicated on a history of other infections that need to be targeted for effective prevention. The other affects the poor and requires specific interventions to reduce and reverse the growing disproportionate incidence of HIV among them.

Income levels and the extent of poverty differ significantly between the USA and South Africa. The World Bank has long used a calculated monetary value to define national poverty lines. This practice has its supporters and detractors and its significant weakness is its failure to accommodate the multi-dimensional nature of poverty, deprivation and disadvantage. Nevertheless, it is useful as a rough proxy measure of deprivation. In the USA, the poverty line is \$ 9 310 per annum; in South Africa it is \$ 730. Half of sub-Saharan Africa's population, 300 million people, live below it. (World Bank, 2004).

The unemployment rate in South Africa is high and has been climbing steadily since at least 1998. In 2002 it was estimated at 29.4% by the official definition and 40.9% by the expanded definition.<sup>46</sup> The majority of the African population bears the highest burden of unemployment, 35.2% and 47.8% by the respective definitions. (HST, 2004). Unemployment rates are higher in the rural areas due to rural underdevelopment, the legacy of apartheid policies of Bantustans and urban removals, and continuing patterns of labour migration. Rural areas have the highest dependency ratios, due to the migration to urban centres seeking work of persons in their economically active years. In 1996, Limpopo Province with a rural population of 89% had a dependency ratio of 92.4. In Eastern Cape Province, the measures were 63.4% and 83.5. This compares with the most urbanised two provinces, with figures for Gauteng of 3.0% and 42.0, and for the Western Cape 11.1% and 52.4. (SAHT, 2004).

All this suggests the need for a multi-pronged strategy for dealing with the HIV/AIDS epidemic that simultaneously addressed the unfinished agenda of eradicating the diseases of poverty and reversing poverty itself. (Bradshaw & Nannan, 2004:55). It also requires South Africa to move away from racial categories in the collection and presentation of health statistics. If the data could be viewed in class categories<sup>47</sup> (instead of using proxies) then it would be apparent that infections and disease are highest among the poorest in South Africa and in the USA too.

South Africa has a generalised HIV/AIDS epidemic and many socio-economic factors that have favoured its development to “an epidemic of [a size] unprecedented in modern history.” (Bradshaw & Nannan, 2004:55). Responses, of the kind developed in and for the USA and developed countries, that attempt to insulate society from *risk groups* and *risk behaviours*, are now inadequate and inappropriate in South Africa and the region, if indeed they ever were. Here, the *risk environment* of so many people's lives requires developmental responses that can reduce the ubiquity of those risks. This needs to be central to any new paradigm for HIV/AIDS in the region in order to check the epidemic.

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<sup>46</sup> The official definition of the unemployed is those people within the economically active population (15-65) who a) did not work during the previous 7 days, b) want to work and are available to do so, and c) have taken active steps to look for work in the previous 4 week. The expanded definition omits criterion c).

<sup>47</sup> Reference has already been made (Page 61) to Head's advocacy for this (Head, 1997).

## CHAPTER 5.

### LIMITATIONS OF THE DOMINANT HIV/AIDS PARADIGM IN SOUTHERN AFRICA

As has been discussed in Chapter Two the dominant AIDS paradigm was constructed in the USA on an early understanding of the disease AIDS and the subsequent biomedical-led explanations of the role of the infectious agent, the Human Immune-deficiency Virus (HIV). HIV came to be presented, uniquely and unusually in epidemiology, as the singular, necessary and sufficient cause of HIV/AIDS. Largely, though by no means exclusively, transmitted by sexual contact, HIV/AIDS generated moralistic and judgmental responses, 'othering' and stigma as surveillance and control measures identified as targets *risk groups* and *risk behaviours* to be avoided. Apart from other sexually transmitted diseases, further possible candidate co-factors in transmission and development of infection were not identified or explored, while research concentrated on gaining a better understanding of the life history of the HI virus and its origin and initial introduction into the human species.

As discussed in Chapter 3 the dominant paradigm met and was applied with some adaptation to the challenge first encountered in the heterosexual and generalized nature of the HIV/AIDS epidemic in sub-Saharan Africa. The construction of all 'Africans' as a risk group became part of the paradigm's lexicon. Africans were associated with unusual sexual practices analogous to the 'abnormal' sexual practices of homosexuals. Assumptions of 'promiscuity' featured prominently in these explanations both in regard to homosexuals and 'Africans'. Research into behavioural factors driving the epidemic in sub-Saharan Africa echoed discredited anthropological schema, although more nuanced 'explanations' resting on culture and the socio-economic structure of migration (e.g. Head, 2003) were also put forward.



Zwi and Cabral (1991) argued for a new term – “high risk situation – to describe the range of social, economic and political forces that place groups at particularly high risk of HIV infection” (Zwi, 1991:1527) – but did not include the direct contribution to risk of an adverse physical environment, and their critique of the dominant paradigm led them only to propose a greater recognition of social determinants on behaviour. They did correctly foresee that “populations of migrant workers, in rapidly urbanizing populations, and among the indigenous populations of the world much affected by sexually transmitted diseases and alcohol use, are likely next targets [of HIV].” (Zwi, 1991:1527). However, like much of the writing critical of the dominant paradigm, this stops short of identifying the reality of the *total extrinsic environment* – physical and biological as well as social/behavioural – of most people's lives.

Research of this nature continued as normal science within the dominant paradigm, its increasing sophistication merely masking the ongoing failure of *risk group/risk behaviour* theories to either explain the epidemic in the region or generate effective interventions. Few of these studies are comprehensive, many are old; their study populations scattered and their methodology dubious. Aggregated, their collective conclusion paints a picture of widespread risk behaviour – sustained ‘promiscuity’ in the form of transactional sex associated with survival strategies in circumstances of poverty, women's inability to negotiate ‘safer sex’<sup>48</sup> in the face of a male-domination, sexual violence, and youthful risk taking – and risk groups across the region in the form of migrant workers, truck drivers, sex workers and soldiers. Johnson & Budlender (2002) identify in their review of HIV risk factors the risk groups commonly referred to in the literature.

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<sup>48</sup> ‘Safer sex’ : a means of reducing the risk of HIV infection by either avoiding penetrative sex or using a condom whenever there is penetration.

This conclusion abstracts from social context and the interplay of the environment on the spread of infection. If epidemiological theory was applied to HIV as it is to other transmittable infections, the likely role of the diseases of poverty, and the known associations between TB and STI's and HIV, would be highlighted.

The dominant paradigm fails to take into account these important factors. This failure follows from the central axiom of the paradigm of the individual and behavioural risk. This places the onus of staying healthy on the individual. At a policy level it promotes rational behaviour changes as if these were available to all individuals, in all circumstances, at all times. Research conducted within the paradigm's boundaries was thus constrained, and failed to search for and find the fuller explanations that lay outside of those constraints. The social and economic factors which distinguish African populations from those in the West were not sufficiently addressed by researchers limited by the dominant paradigm.

Fee and Krieger explored contesting interpretations of AIDS and found that "although it is certainly possible to contrast scientific and popular views, it is perhaps more revealing to contrast individualistic vs collective, and biomedical vs social and historical, views of the disease." (Fee & Krieger, 1993:1477). They conclude that –

Ultimately, the biomedical model embodies an approach to analyzing disease that is fundamentally individualistic and sanctions only the physicians' or scientists' point of view . . . Reflecting an ideological commitment to individualism, the only preventative actions seriously suggested are those that can be implemented by solo individuals . . . . Intended or not, these attitudes implicitly accept social inequalities in health and fail to challenge the social production of disease . . . [It requires a paradigm that] reminds us that AIDS, like other diseases, cannot be understood or addressed solely within the parameters of the health care system . . . [and that] re-emphasizes the truly public character of public health.

(Fee & Krieger, 1993:1481-1482).

A critical epidemiology requires that the context of an epidemic be addressed. Virchow in the mid-19<sup>th</sup> Century "situated the primary origins of epidemic diseases in economic misery." He wrote in 1848 that "the history of epidemic diseases must form part of the cultural history of mankind. Epidemics correspond to large signs of warning which tell the true statesman that a disturbance has occurred in the development of his (*sic*) people which even a policy of unconcern can no longer overlook." (Virchow, quoted in Schoepf, 2004:18).

The dominant AIDS paradigm excludes understandings, and from them explanations and then interventions, that take into account the context in which the epidemic is developing, far less acknowledge any 'disturbance' in society. The focus of the biomedical model is on the disease agent HIV and risk of exposure to it; an uncritical social medicine "ensures – predetermines – that 'risk' will be defined in terms of individual determinants and individual behaviour." (Mann 1996:3). The model allows the influence of social considerations only by aggregating individuals at risk into *risk groups* to which is ascribed what was previously an individual lifestyle choice as a culturally- or socially-determined *risk behaviour*. Constrained by the dominant paradigm, the best that is offered by way of explanation for that risk behaviour, is that the members of the risk group lack the means – knowledge and will, and for women power – to change their behaviour.

### **The Legacy of Colonialism and Apartheid**

Doyal (1979) in her political economy of health first describes the prevalence and then decline of diseases of poverty in Britain in the period of capitalism's later development, and then turns her attention to health, illness and underdevelopment in the underdeveloped countries. She points to the exaggerated potential of scientific medicine for solving health problems and the way claims for it "obscures the role of imperialism itself in the creation of ill health in the under-developed countries of the world." (Doyal, 1979:96). Sanders (1985) takes up Doyal's theme. He has considered medicine and the politics of underdevelopment, a legacy of colonial exploitation, pointing to the diseases of poverty that have persisted in the developing countries a century after social and economic development in the 'rich' countries saw their virtual eradication, with medicine and drugs only making a belated and insignificant contribution. Popenoe has identified patterns of disease in developed and undeveloped countries and South Africa, and point to the "distinct racial and gender patterns of disease and death which are closely associated with socio-economic status and access to resources." (Popenoe *et al*, 1998:222). Bernstein (2000) has described the development of colonialism and capitalism and its devastating impact on the well-being of the peoples of the colonised territories through the expropriation of resources of all types.

The dominant AIDS paradigm has served to exaggerate the potential of biomedicine to deal with the HIV/AIDS epidemic in South Africa and sub-Saharan Africa, excluded from view the legacy of colonialism and apartheid, and ignored the role of the current world order<sup>49</sup> today in the persistence of inequalities, poverty and ill health and their concentration in the underdeveloped countries. The paradigm, and most research conducted within its constraints, fails to adequately address the context, the *total environment*, of the epidemic.

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<sup>49</sup> The term 'current world order' is chosen as a neutral description of the international and supra-national relationships that prevail at the beginning of the new millennium. 'Globalisation', the terms of world trade, concentrations of capital in corporations acting globally, the role of the UN and its agencies, and the hegemonic assumptions of the United States of America, along with many other considerations, are understood to be implicit in the term.

For South Africa, addressing the context of the epidemic requires overcoming also the legacy of apartheid (and of the colonialism on which it was founded), a task made no easier given imbalances of the current world order. De Beer (1984), in a critical commentary on the then state of health and health services in apartheid South Africa, illustrates how the conditions that arose directly from apartheid policies impacted negatively and devastatingly on people's health. In urban areas, forced relocations, 'separate development' and the inequitable distribution of health care increased poverty and intensified poor health in the racially-defined, segregated communities. Enforced urban racial segregation and relocation to achieve it increased poverty and ill health.

De Beer gives as an example a study in Clayfield, a resettlement township for residents of Indian origin in Durban. It found that people's rents were up to tenfold what they were in their former homes, that transport costs were higher, and that half the children were malnourished. Of these 50% came from homes where the total family income was less than R300 per month. He also gives the following indicators of generalized ill-health and poverty: in Durban 45% of African children admitted to King Edward Hospital for any reason were found to be malnourished, and one quarter of these died; in 1981 in Grahamstown, with one of the highest unemployment rates of any urban area in South Africa, 30% of babies died before they were one year old. In 1981 infant mortality rates for Cape Town were 9.4 per 1000 live births for 'whites' and 34.6 for Africans. For Pretoria they were 10.8 and 53.3 respectively. (De Beer, 1984:35-36).

Current conditions that contribute to ill-health, disease and the HIV/AIDS epidemic in rural areas have their roots in colonialism (Sanders, 1992; Doyal, 1979; and others) and are a legacy of apartheid in practice. Apartheid's 'Bantustan' policies<sup>50</sup> involved the forced removal of people from urban areas, 'white' occupied farms, land owned by mining companies and state land to remote fragments of the country, often marginal and unproductive, comprising barely 15% of the country. Underdeveloped, lacking infrastructure and overcrowded, the original inhabitants and the millions relocated there faced appalling levels of poverty, ill-health and disease.

Quoting figures from Simkins (1981), de Beer draws attention to the population shifts that forced removals brought about. In 1961, 37% of Africans lived in the reserves, 31.2% on 'white' farms and 31.8% in urban areas. "Twenty years later the situation had changed dramatically, and 54% of Africans lived in the Bantustans with only 20.6% on white owned farms and 25.4% in urban areas. The total 'homeland' population rose from 4 739 855 in 1960 to 11 338 308 in 1980, an increase of 239%." (De Beer, 1984:49-50). De Beer describes the disease outbreaks, ill-health, malnutrition and hunger; the overcrowding and impossibility of productive agricultural activity; the levels of unemployment and lack of rural development; lack of basic infrastructure, education provision and amenities; the poor social conditions and family life; and the inadequacy of health services that followed in crisis proportions.

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<sup>50</sup> British colonialism 'reserved' Reserves for the indigenous peoples until colonialism wished to exploit them; it also 'protected' them as Protectorates when they were threatened by interests the British saw as competition (e.g. Lesotho and Swaziland, against the Boer Republics and the Portuguese respectively). They were also 'reserves' of labour for colonial mining and other capitalist enterprises to draw on. Later, apartheid ideology, in the face of decolonisation in the rest of Africa, paternalistically presented them as 'homelands' where 'their' African people, ill-defined but sub-divided by language, culture and ancestry, could be 'at home' when not away working in 'white' South Africa. The migrant labourer would also 'return home' to see his wife, children and family, marry and start a family and when ill to die. The economic savings in the form of low wages, and hence profits, this system of cheap labour and distribution of the costs of labour reproduction brought to capitalist employers outweighed the cost of low skills development for decades until the 1980's. (Wolpe, 1972; Davies *et al*, 1988; Worden, 2000).

De Beer (1984:37-45) considers that the 1977 Health Act paid lip service to the health component of this crisis, urban and rural, but lacked the will to bring about meaningful improvements. The growing economic and political crisis facing apartheid South Africa in the years that followed the Act's introduction meant that little progress was made: "In fact the proportion of the budget allocated to health services declines from 4.2% in 1976 to 3.4% in 1980." De Beer (1984:44). Of course a narrowly-defined health service response could have made little impact, no matter what share of state resources it employed, as long as the political will to address and reverse the conditions that caused the crisis in the first place was lacking.<sup>51</sup> The risk to health lay in the enforced conditions of the majority of people's lives. As in the industrial slums of British cities 150 years earlier, it was overcrowding, lack of decent housing, low wages, ill-nourishments and lack of the basic amenities of access to clean water and improved sanitation that needed addressing if the prevalence of disease was to be significantly reduced.

Writing 20 years ago about health and health services in South Africa, de Beer highlighted that "people's health is directly related to the *environment* in which they live and work." (De Beer, 1984:31 – *my emphasis*). Epidemiology deployed to understand the different manifestations of the HIV/AIDS epidemic between the United States of America and South Africa would need to address these environmental issues and employ an ecological understanding of interrelationship of factors influencing the course of the epidemic, as modeled in the *Mandala of Health*. For South Africa, addressing the social, economic and environmental conditions in which people live their lives could be expected to be more effective in eradicating disease – as improvements in those conditions in the developed countries did – than medical interventions.

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<sup>51</sup> What can be achieved where there is political will and popular support from the beneficiaries of a policy, is exemplified by South African 'white' Government's achievements in reversing the parlous nutritional state of many 'poor white' children. De Beer (1984:36) records the 1938 percentages of malnourished of white schoolboys (in the Transvaal 47.6%, in the Orange Free State 43.6%, and the Cape province 31.5%), a situation overcome in a relatively short period of 10 to 15 years.

These factors in the social and physical environments are capable of alteration by human agency. Factors in the biological environment can be influenced or contained by human intervention. A conclusion would be that these *environmental* factors are the ones that must be addressed to have an impact on the course of the epidemic, and an empowering paradigm for HIV/AIDS in South Africa will need to encompass this. Development leading to an overall improvement in the conditions of life, the environment in which it is lived, and the standard of living of the people has to be addressed. Commencing this task has only become possible since the end of apartheid and with South Africa's democratic transformation.

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## CHAPTER 6.

### TOWARDS A NEW PARADIGM FOR A DEVELOPMENTAL RESPONSE

The conclusion reached at the end of the previous Chapter is a direct challenge to the dominant AIDS paradigm with its elevation of the infectious virus to the status of singular, necessary and sufficient cause of infection, and its prevention strategy based on identifying *risk groups* and having members of them change their individual *risk behaviour*. The conclusion suggests the need for a new paradigm, in which factors in the extrinsic environment are elevated to a much higher level of significance in explanations, as the focus for research, for prevention interventions and targets of development to transform the context in which the epidemic has thrived. A new paradigm suited to South Africa – and by extension, the southern African region, linked to it by over 100 years of migrant labour to the mines – will need to reintroduce multiple causation into consideration of the epidemic and point to a range of extrinsic factors that are highly likely to be significant in the HIV/AIDS epidemic in South Africa and the region. These are covered by the concept of *risk environment*.

An emphasis on reducing risk in a new paradigm will also counter the tendency, identified in the USA by Fee & Krieger (1993), for HIV/AIDS to be considered a chronic disease with therapy replacing prevention as the priority. ARV therapies are a welcome development in South Africa's public health response but with an epidemic on the scale here, prevention needs also to remain in the forefront of responses.

As has been discussed in the foregoing pages, the dominant AIDS paradigm fails to provide a satisfactory explanation of the difference between the epidemic in the USA and South Africa. It can only be adapted to the latter if some regional expression of sexual behaviour is implicated as the 'cause' of the intensity of the epidemic in sub-Saharan Africa. Twenty years of research effort to uncover differences in sexual behaviour have not provide convincing evidence of sufficiently generalised and substantially different behaviour to account for differential between 0.6% and 22.5% prevalence rates. It is time to replace that paradigm.

### **Considerations to Inform any New Paradigm**

Two key considerations need to be borne in mind and should inform the development of a new paradigm. The first is after Key (1993) who discussed the implications of viewing HIV/AIDS as a manageable chronic condition. Promoted by medical science and the commercial interests behind drug therapies, she argues that this view tends towards an over-reliance on therapeutic management of the infection and disease, down-plays the role of prevention, and ignores the economic realities for many of limited access to medical treatment and care. It has already been recorded that in the USA these are the poor and many women. That these were concerns in the developed USA as early as 1993 makes it of vital importance that in South Africa – less developed, with less resources and a less developed health care system, greater poverty and a much higher proportion of the population disadvantaged in accessing quality health care – that the welcome introduction of treatment for AIDS does not detract from the fundamental intervention of prevention and control.

The second consideration comes from Sanders (1985) who discusses the limited impact of the medical contribution on the decline in poverty-related morbidity and mortality and the importance of nutritional and environmental improvements in nineteenth century England. So successful has been the combination of environmental improvements and rising living standards in controlling the spread of infections, that infectious diseases have been all but eradicated in the USA and other rich industrialised countries. Their vestiges persist largely amongst the poor, disadvantaged and marginalized of those countries' populations for precisely the reasons – environmental and socio-economic disadvantage – that they are widespread in the underdeveloped countries, where it is among the poor and lower socio-economic classes that they are most prevalent. Sanders (1985:77) considers that in the underdeveloped countries, without nutritional and environmental improvements no further great impact on mortality can be made.

Bearing these two considerations in mind, and regarding HIV infection as no different from other transmittable infections, then it would seem that preventing and reducing it requires the same measures as have been and are employed to achieve reductions in the prevalence of other infectious diseases. Critical epidemiology, as has been illustrated by reference to Virchow and others, places responsibility for this in the public arena, with medicine working alongside other social interventions to improve the conditions of people and thus their health and resistance to infection. The role in the HIV/AIDS epidemic of other infections (STI's, TB and malaria in particular have been noted) and poor nutrition, impacting on health and resistance to infections of all types, as has been described, further underscores the importance of responses to the HIV/AIDS challenge being situated in a comprehensive Public Health strategy.

How might this translate into a new, developmental, paradigm for HIV/AIDS, one suited to the nature and context of the epidemic in South Africa? Fundamentally, any new paradigm must accommodate that which is different between the epidemic in the USA, where the current paradigm was constructed, and that in South Africa. First, therefore, it will have to allow for the epidemic in South Africa as a generalized one, spread largely heterosexually, with its infection a threat to the health and well-being of all citizens. Then, an appropriate paradigm will need accommodate responses to the epidemic that can address the factors that have been identified as significant to the development of the generalized epidemic. This requires affording socio-economic and environmental factors a greater significance to the risk of infection than they are given in the dominant AIDS paradigm. Thirdly, it needs to allow that HIV/AIDS, like other infectious diseases, cannot be addressed solely within the parameters of the health care system, but requires an inter-sectoral strategic response led by government, but in partnership with communities and civil society. Fourthly, the demographics of the South African population and the high prevalence rates among young people need to be taken into account, with implications for prevention interventions.

## Dimensions of a New Paradigm

Taking and developing each of these above four points in turn amplifies the dimensions of any new paradigm –

### 1) Nature of the Epidemic

South Africa has a generalised HIV/AIDS epidemic, affecting all communities, but with a large proportion of the population in the lower socio-economic categories more infected and adversely affected by the epidemic. Because it is largely heterosexually spread, this generalized epidemic places *all who are sexually active* at risk of infection. Women, because of physiological characteristics and gender discrimination and men's attitudes, are more at risk in all categories. Vertical transmission (mother to child) is now manageable within the limits of preventative therapy and its provision at time of need, which needs improvement. *Risk group* and *risk behaviour* understandings serve only to distract from the risk *all* need to face. This real risk, almost exclusively the horizontal sexual transmission of an infection, exists to some degree for everyone engaging in sex.

### 2) Factors Contributing to Risk

*Risk environment* has been recognized as most important contributor to enhanced exposure to HIV infection risk, and the rate and intensity of the consequences of infection. A new emphasis on social and collective, as opposed to individual, responsibility for reducing risk should displace *risk groups* and *risk behaviours* as the sole focus of attention.<sup>52</sup> The degree of risk from all factors rises sharply and inversely with socio-economic status and environmental conditions. The poor and those living in disadvantaged environments are at greater risk of becoming HIV infected, and once infected of infecting others, because of those conditions and because of the poor health status that for most accompanies those conditions.

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<sup>52</sup> The limitations of individual behaviour change strategies have been noted on Page 8 by reference to Fee (1993:1481) and the centrality of individualism to the bio-medical paradigm by reference to Allais (1995:3)

In urban areas, the large and growing numbers of people living in peri-urban settlements in conditions prejudicial to their health requires a multi-sectoral developmental response, progressively but rapidly improving conditions with basic essentials such as food, clean water and hygienic sanitation addressed first. In rural areas, measures to relieve extreme poverty and extend basic public services including primary health care to within reach of all need to be accelerated. *Risk environment* captures all these complex and inter-related factors as one target for co-ordinated, inter-sectoral and developmental interventions.

### 3) Development of Health Care

Wider distribution of quality primary health care provision, and improved access to secondary health care when required should be part of the developmental agenda. But Public Health promotion requires that adverse physical environmental conditions and economic deprivation that contribute to ill-health are overcome. Improved nutrition, ready access to clean water, managed and improved sanitation, hygiene education, improved living environments and then housing and improved primary health care delivery and access to secondary health care when required, should be assembled into a strategic programme able to mobilise government agency and civil society in partnership. Medicine's contribution is part of this, particularly the effective delivery of treatment for opportunistic infections and of anti-retroviral (ARV) therapies for those clinically indicated in need for them, and in biomedical research for improved treatments, vaccines and ultimately cures. But medical science should not assume or be granted an importance that deflects attention away from the primacy of prevention strategies. As Virchow first proposed, health care is a public good and medical science's role is alongside other social forces to meet social need and the welfare of society. This will make a greater contribution to reducing infectious diseases, morbidity and mortality, than the biomedical contribution acting alone, as Sanders, Doyal and others have demonstrated.

#### 4) Individual Direct Protection against Infection

Half of South Africa's population is under nineteen years old; almost 18% (8.07 million) are between 15 and 19 years old (2001 Census), and in the age group 15-24, 10.2% are estimated to be HIV-positive (SAHR, 2004). The implications of these figures for the basic message to protect against HIV infection need to be considered. The individual risk of infection in South Africa lies overwhelmingly in unprotected penetrative sex and with high numbers of people already infected every such act carries some risk. Protection against that risk, for anyone engaging in penetrative sex, is possible *only* by using a proven effective barrier method against the transfer of the infectious HI Virus. The male condom and the female condom (or *femidom*) are the only currently available prophylactics. They also afford protection against STI's, reducing the spread of significant co-factors in the HIV/AIDS epidemic.

The message, in the South African context, should be clear and simple: *if and whenever you have penetrative sex, condomise first*. This makes no judgment on private behavioural choices and introduces no moral content to detract from sound biological advice. As a message it still applies to those who have chosen to attempt to abstain and works if they fail; for those who are being faithful, it affords protection if and when they or their partners lapse. Along with the message, condom use needs to be promoted and condoms in sufficient numbers need to be distributed and available accordingly. The acknowledged limitations facing women negotiating safer sex need to be addressed with wider availability now of female condoms, research into more acceptable forms of female condom, and the introduction of safe microbicides through the public health sector as soon as they become available.<sup>53</sup>

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<sup>53</sup> Research into a chemical barrier, a microbicide applied internally by the women whose partner need not be aware of its use, is reported to be well advanced (Clarke, L, 2004) and the 'roll out' of a safe and effective product should be urgently addressed as soon as one is available.

Factors that increase the efficacy of transmission between partners need to be addressed by Public Health as part of efforts to improve the health of the population in general. For sexually active people, other STI's are a threat to health: as well as their transmission during unprotected sex, they add to the risk of HIV transmission. Health education, including the value of barrier methods to reduce transmission, and early detection and treatment are already part of public sector health facilities' policy and service delivery needs to be sustained and intensified throughout the public sector and become standard practice in the private sector. Expansion of the National TB Control Programme to include HIV Voluntary Counselling and Testing (VCT) and provision of TB prophylaxis to HIV-positive persons is already underway and the roll out of the Department of Health's comprehensive treatment (ARV Therapy) plan for HIV/AIDS provides an opportunity for expanding the provision of integrated TB and HIV/AIDS care. (Bamford, 2004:223).

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## CONCLUSION

This study started by posing the problem of how to explain the different nature and scale of the HIV/AIDS epidemic in South Africa and the United States of America. To answer this question it introduced the ideas of Kuhn about the role of paradigms in science and the role they played in defining the context in which scientific work is done.

To this insight about the way science 'works' was added the view that explanations and understandings of disease and epidemics are also socially constructed and contested. Drawing on the work of Cochrane [2004], among others, the way HIV/AIDS was socially constructed, involving the interaction of developing scientific 'knowledge' and popular views, was reviewed. This identified the dominant paradigm that came to inform understandings and responses to the HIV/AIDS epidemic as it has spread and grown and taken on different manifestations in different parts of the world. How aspects of the construction of HIV/AIDS served social uses in the USA were briefly identified. Explanations and responses within the framework of the dominant paradigm, imported from the USA, were also put to social use in apartheid South Africa, initially to isolate AIDS to the gay community where it first appeared, and then to add HIV/AIDS to the range of fears mobilized to resist the advance of change perceived as 'coming down from black Africa'.

The centrality to understandings of the HIV/AIDS epidemic and explanations of its spread, within the dominant paradigm, of the components *risk groups* and *risk behaviours*, was highlighted. Also highlighted was the paradigm's presentation of the HI Virus as the singular, necessary and sufficient cause of HIV/AIDS, and this was contrasted with epidemiology's more cautious view of disease agents as necessary but seldom sufficient causes of disease.



Considerations of epidemiology theory identified multiple causation and the role of co-factors in the incidence and development of disease and occurrence and spread of epidemics. The importance of interactions between intrinsic factors and extrinsic, or environmental, factors in these processes were highlighted, and the difference between infection and disease was defined. A public health view of disease control and prevention and the individualistic view of much of medicine, that informed the biomedical input into the dominant AIDS paradigm, were contrasted.

Differences in the manifestation of the epidemic in South Africa from that in the USA were discussed. The challenge the generalised and heterosexually-spread epidemic in Africa posed for the dominant paradigm was identified. At the same time as South Africa was beginning to acknowledge an epidemic outside the confined gay community, and perceived it as coming from 'black' Africa, explanations of 'AIDS in Africa' were being constructed, still within the dominant paradigm's limiting framework of risk groups and risk behaviours.

A review of studies of HIV/AIDS in Africa found evidence of efforts to make the facts fit the paradigm, 'Africans' were defined as a risk group by virtue of notions of widespread unusual sexual behaviours and 'promiscuity' drawn from colonial and racist representations of African society. The strong objections to this of progressive and African scholars was noted, as was the development of more nuanced representations of these behaviours being rooted in cultural and socio-economic realities in African societies. This study noted that despite this relative progress, most studies still accepted the confines of the dominant paradigm and sought explanations in *risk behaviours* and identified as *risk groups* those who engaged, out of choice or for survival in adverse circumstances, in those behaviours.

The study then looked at differences between society in the USA, considered typical of a rich industrialised country with a HIV/AIDS epidemic so far confined to a small part of the population, and South Africa. South Africa is typical of other countries in southern Africa. It has a widespread HIV/AIDS epidemic affecting all sectors of society, although if colour is used as a proxy for socio-economic status, with a greater concentration among the poor.

The comparison highlighted the virtual absence of infectious diseases and indicated that poverty affected only a relatively small minority of the population in the USA. This is in stark contrast to the persistence of high prevalences of certain infectious diseases, notably TB, widespread poverty and deprived living environments, urban and rural, in South Africa. The comparison also found that STI's are fairly widespread in both the USA and South Africa, but that health care systems are more developed and accessible for the majority of people in the USA. It was also argued that although the majority of persons infected with HIV in the USA were still men, the infection and AIDS was present among women and that the HIV/AIDS epidemic disproportionately affected communities that were also disproportionally represented among the poor and disadvantaged in the USA. It concluded that, as in South Africa, the HIV/AIDS epidemic impacts more on the poor, or people of lower social class, and that in this respect at least HIV is no different in its impact than other infections.

The tradition of critical epidemiology focusing on public health, as against the focus of bio-medicine on the individual diseased body, and the importance of the environment to the occurrence, spread and persistence of infectious diseases in societies, were drawn on to then look again at possible explanations of the differences between the USA's and South Africa's epidemics. It was argued that the explanations of difference lay in the respective conditions of life of most. That South Africa had not completed the demographic transition and still carried a high burden of the 'diseases of poverty' was noted as the most significant difference.

A critique of the dominant AIDS paradigm in its application to explanations of the HIV/AIDS epidemic in South Africa, concluded that the paradigm itself was inadequate. It failed to allow for the significantly different socio-economic and physical environmental context and the origin of these in colonialism and apartheid. Progressive understandings of the role of colonialism and apartheid in creating those conditions were found to shed light on the role of the dominant paradigm in deflecting attention from the need to overcome them. The need for development to make further progress in eliminating the 'diseases of poverty' was highlighted.

This part of the study concluded that the dominant paradigm largely excluded consideration of social transformation and developmental responses to the epidemic. It was argued that this failure stemmed from the central focus of the paradigm on *risk groups* and *risk behaviours* and its neglect of risk environments on the one hand. On the other, the paradigm assigns too much weight to the medical contribution, exemplified by *the status given to the HI Virus*.

It is here concluded here that missing link in the chain of inference for a better understanding of the HIV/AIDS epidemic in southern Africa is the *environmental factors* driving it. The dominant paradigm requires a further central component, here called the risk environment. By adding this component and giving it the primacy it requires, the existing risk components of the paradigm (group and behaviour) are demoted to the extent that the paradigm itself is shifted. If, in addition, the limitations of the medical contribution are accepted and developmental objectives take their rightful place in the struggle for health, then the current dominant HIV/AIDS paradigm is fundamentally changed.

This study's overall conclusion is that a new paradigm is required for South Africa. It must be able to encompass the generalized nature of the regional epidemic; its intensification by poverty and underdevelopment; responses that emphasise prevention and include integrated multi-sectoral development programmes to tackle underlying causes in the conditions of poverty and deprived environments. Far from de-railing South Africans' transformation and development expectations, the challenges of the epidemic should re-energise commitment to bringing them about.

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